The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 729.---Vol. XIX.] LONDON, SATURDAY, AUGUST 11, 1849. [Price 6d.

VALUABLE MINE SHARES FOR SALE.—TO BE SOLD, BY AUCTION, on Wednesday, the 22d day of August inst., at the hour of Twelve o'clock at noon, at the Star Inn, HELSTON, by order of the trustees of the estate and effects of Mr. James Clarke, the following SHARES in all those productive

TIN AND COPPER MINES—viz.:

1 (119th)	SHARE in the	GREAT WORK MINES, in the parishes of Breage & Germoe.
1 (112th)	ditto	WHEAL MARGARET—Lelant.
1 (200th)	ditto	WHEAL VOR—Breage.
10 (1000th)	ditto	STRAY PARK—Camborne.
2 (256th)	ditto	WEST TREASURY—Gwinear.
2 (256th)	ditto	WEST PROVIDENCE—Gwinear.
8 (1000th)	ditto	WHEAL TREMAYNE—Gwinear.
5 (256th)	ditto	EAST GODOLPHIN—Breage.
10 (256th)	ditto	ST. AUBYN and GRYLLS—Breage.
4 (128th)	ditto	WHEAL ROSE—Sithney.
6 (219th)	ditto	SOUTH WHEAL FORTUNE—Breage.
1 (128th)	ditto	LELANT CONSOLS—Lelant.
12 (1000th)	ditto	CARN PERRAN—Perranuthnoe.
20 (256th)	ditto	EAST WHEAL HOPE—Gwinear.
2	ditto	TROWAN CONSOLS—Towednack.
4	ditto	WHEAL CARPENTER—Gwinear.

Together with the like SHARES of and in all the MATERIALS and MACHINERY thereof.—Further particulars and information may be had on application to the agents on the mines, and to Messrs. Grylls and Hill, solicitors, Helston.

Dated August 4, 1849. 1

VALUABLE SILVER-LEAD MINE FOR SALE.— TO BE SOLD, BY AUCTION, at the Angel Inn, HELSTON, in the county of CORNWALL, on Wednesday, the 22d day of August next, by Three o'clock in the afternoon, all that valuable SILVER-LEAD and COPPER MINE, called

WHEAL ROSE, 2

in the parish of SITHNEY, in the said county of CORNWALL, together with the MACHINERY, HALVANS, and MATERIALS thereunto belonging.

Wheal Rose Mine is held under a lease for 21 years (of which term upwards of 15 years remain unexpired), under 1-18th dues, but no dues are payable to the lessor until all costs and other expenses in and about the working of the said mine, from the commencement, shall have been repaid by the produce thereof to the adventurers.

The sett is nearly a mile in length on the course of the lodes, and about half a mile in breadth, and has produced many thousand pounds worth of the richest silver-lead ore, averaging about £20 per ton.

This mine (which affords a good opportunity for the investment of a small capital) is offered to the public, as some of the present adventurers are unable to contribute their proportions of costs towards an extended working of the adventure.

The agents have received instructions to give every information at the mine, and to accompany all parties who may wish to inspect the workings; and for further particulars application may be made to T. J. Hill, Esq., 52, Threadneedle-street, London; or to the purser, Mr. Plomer, Helston, Cornwall.—Dated July 23, 1849.

VALUABLE COLLIERY STOCK OF ENGINES, RAILS, WAGGONS, &c.

MR. WETHERELL will SELL, BY AUCTION, on Thursday, the 30th of August next, at Ten o'clock in the forenoon, a LARGE QUANTITY of valuable COLLIERY STOCK, now lying at the SHINCLIFFE STATION, on the York, Newcastle, and Berwick Railway, consisting of ONE ENGINE, of 45-horse power, with boilers, &c.; ONE ENGINE, of 35-horse power, with boiler, &c.

Also, ONE HUNDRED TONS of RAILS and CHAIRS, of various sizes, and FORTY-FIVE SPRING-MOUNTED COAL WAGGONS, in excellent repair. 3

At the same time and place, will BE SOLD, an excellent ENGINE, 30-horse power, with boilers, &c. This engine is now standing at Evenwood Colliery, where it may be seen on application to David Welford, at the Oaks, Evenwood.

N.B.—The stock at Shincliffe Station may be seen on application to Mr. Oxdale, station master, where catalogues may be had; and also of Mr. Brogden, Stockton-on-Tees, and Mr. Wetherell, Durham.—Durham, July 31, 1849.

WEST OF SCOTLAND MALLEABLE IRON-WORKS, AND LANDS OF BRAIDHIRST AND MILTON.

TO BE SOLD, BY PUBLIC ROUP, within the Royal Exchange Sale Rooms, on Wednesday, the 29th day of August, 1849, at One o'clock in the afternoon,

MALLEABLE IRON-WORKS. 4

These large WORKS, belonging to the West of Scotland Malleable Iron Company, situated at MOTHERWELL, in the parish of Dalziel, and county of Lanark, consisting of REFINERY FIRES, FORGE, RAIL, ROLLING, SLITTING, HOOP, PLATE, and SHEET MILLS;

And, with a little further outlay, capable of producing about 600 tons finished iron weekly.

These works, which have been erected on the most approved plan, have been in operation since May, 1847; and, besides rails, can be made to turn out all the sizes and varieties of iron usually required by the trade.

There are on the ground one blowing engine of about 80-horse power for refineries, two forge and two mill engines, condensing and that work expansively, each about 100-horse power. Between the mill engines there is a small subsidiary high-pressure engine, of about 40-horse power, for driving the guide mills. There are likewise one lathe and one pumping high-pressure engines, each about 20-horse power. All these engines, with one exception, are in first-rate working order.

Attached to the works are smiths', wrights', and fitting-up shops, with turning lathes, cranes, &c., complete. Also, offices, stables, mill manager's house, and 98 workmen's houses, besides ample accommodation in the village of Motherwell, immediately adjoining.

These works are most favourably situated, being surrounded by coal and pig-iron works; and, as the Caledonian Railway forms one of the boundaries of the works, railway communication to all parts of the kingdom is afforded; and the works have a direct communication with the Harbour of Glasgow, distant 10 miles, by the Clydesdale Junction Railway. Upset price, £45,000.

LANDS OF BRAIDHIRST AND MILTON.

These lands, situated in the parish of Dalziel, and county of Lanark, lie contiguous, and extend in all to 390 acres, or thereby, but from that fall to be deducted about 30 acres, set apart for the Malleable Iron Works, to be held under Feu; and about 20 acres occupied by the Village of Motherwell, also held under Feu—leaving about 340 acres to be disposed of, together with the Feu-Duties exigible from the portions feued as aforesaid, which Feu-Duties amount to nearly 300l. per annum.

The lands are most advantageously situated, being bounded on the south-west side by the turnpike road from Glasgow to Lanark, on the south-east by the turnpike road from Edinburgh to Hamilton, and on the north-east, north, and north-west sides by the River Calder; and being intersected by the Wishaw and Coltness Railway, now forming part of the Caledonian Railway, easy access and communication is afforded to all parts of the kingdom.

There is an excellent Farm-Steading on the lands, with Out-Houses and Cottars'-Houses, sufficient for a large farming establishment; and, having been for some years in the hands of the proprietors undergoing improvements, the lands are in the best condition.

The lands contain MINERALS, and the purchaser will obtain right, not only to the minerals in the Unfeued lands, but also to a large portion of those under the Feued Ground. The Coal has been wrought at a moderate depth for more than 12 months, for the supply of the Malleable Iron Works, and has been proved to be of excellent quality.

It is proposed to reserve to the Proprietors of the Malleable Iron Works a right to Feu about ten acres of additional ground, adjoining their works, at the rate of 6l. per acre, (exclusive of Minerals, however), provided the option is exercised within a specified period. Upset price 25,000l.

For further particulars, application may be made to Laurence Hill, jun., at the works at Motherwell; James Anderson, at the company's office, 88, St. Vincent-street; or to Moncrieff, Paterson, and Forbes, 45, West George-street, Glasgow, in whose hands are the title-deeds and articles of roup, and plans of the property.

Glasgow, 21st July, 1849.

EXTENSIVE IRON-WORKS FOR SALE, BY PRIVATE BARGAIN,

THE BLAIR IRON-WORKS, 5

Belonging to the Ayrshire Iron Company, with the whole MINERAL FIELDS held by the said company, under favourable leases, including the MALLEABLE IRON-WORKS, immediately adjoining, so far as erected—all as particularly described in former advertisements.—There is a large STOCK of IRONSTONE on the ground, which may be had at a valuation.

For further particulars apply to Mr. Biggart, at the works; Mr. Watson, 32, and Mr. Brown, 35, St. Vincent-place, Glasgow; Messrs. M'Clelland and Mackenzie, accountants, there; Messrs. Gibson-Craig, Dalziel, and Brodie, W.S., Edinburgh; or Messrs. Montgomerie and Fleming, writers, Glasgow—the last being in possession of the title-deeds.

Glasgow, June 20, 1849.

JAMES BOYDELL, LAND, MINE, AND MACHINERY VALUER, AND AGENT,

No. 54, THREADNEEDLE-STREET, LONDON, 6

HAS TO DISPOSE OF

Several PATENT RIGHTS, FREEHOLD ESTATES, LEASES of FOUNDRY and ENGINEERING WORKS, FREESTONE QUARRY, and COAL and IRONSTONE MINES. SHARES in a well-known SLATE QUARRY, the PART, or the WHOLE, of a well-established GAS WORK, and STEAM-ENGINES and MACHINEY of all descriptions.

TO ENGINEERS, BUILDERS, AND ARCHITECTS.

JAMES BOYDELL, 54, THREADNEEDLE-STREET, having been a very large manufacturer of machinery and irregular shaped iron, and having accomplished the rolling of some descriptions of the latter, thought by many to have been impracticable, will be happy to ASSIST any ENGINEERS, SHIPBUILDERS, and ARCHITECTS, in the planning of the details of what IRONWORK they may have occasion for, or bringing to perfection any invention in machinery, as well as procuring such materials for the purpose as they may require.

COAL.—TO BE SOLD, OR LET, either in one or more lots, all that valuable VEIN of COAL, commonly called the UPPER MOUNTAIN MINE, extending over about 1000 acres—situate in the township of GREAT HARWOOD, in the county of Lancaster. The mine has been recently proved, and found, at 77 yards from the surface, to be 5 feet in thickness, and of an excellent quality. The above property is within a short distance of the Leeds and Liverpool Canal, and in the midst of a populous and large manufacturing district. 7

A section of the borings may be seen by applying to Mr. Boosie, Hufford Hall, Ormskirk; or to Mr. Whittle, Charnock Richard, Chorley—to either of whom proposals may be sent.

VALUABLE AND EXTENSIVE MINES OF COAL AND IRONSTONE.

TO BE LET, ON LEASE, on most advantageous terms, the COAL and IRONSTONE under a very large tract of land, in the parish of RUABON in the county of DENBIGH, adjoining the Shrewsbury and Chester Railway.

The proprietors of the ESTATES on which the Ponkey and Aberderfyn Iron-Works were formerly carried on, have made arrangements TO LET BOTH PROPERTIES TOGETHER, which will give the lessee of them facilities to carry on a lucrative business—very rarely to be met with.

The COALS and IRONSTONE on these ESTATES may be raised at very much less than an average cost, and the quantity proved in them (besides what are under a very large portion of one of them, in which there is no doubt they will be found) is estimated will supply iron-works with materials to make 400 tons of pig-iron weekly for upwards of 30 years, as well as 50,000 tons of the much and justly-celebrated Yard and Wall and Bench Coals per annum for sale, for the same period. 8

Printed particulars of the property, and lithographed plans of the estates, showing the minerals under them, with calculations as to the expense of making iron from them, as compared with that of manufacturing it in Staffordshire, may be had upon application at the office of the *Mining Journal*, 26, Fleet-street; and at J. Boydell's, 54, Threadneedle-street, London; and at Messrs. Longeville and Williams, solicitors, Oswestry.

Oswestry, June 6, 1849.

TO COAL, COPPER, IRON, CHEMICAL, and other MANUFACTURING COMPANIES.

TO BE LET, ON LEASE, for a term of years, as may be agreed on, a most extensive COAL-FIELD, of the first quality; a FARM, of 240 ACRES of GRASS LAND, with a good commodious DWELLING-HOUSE and attached OFFICES, WALLED GARDEN, STABLING for 50 or 60 horses, from 20 to 30 WORKMEN'S COTTAGES and GARDENS, most eligible sites for the erection of Copper, Iron, Chemical, and other Manufactories, situate at Neath Abbey, in the county of Glamorgan, being close to the navigable River Neath, and only 5 miles from Swansea. 9

Mr. W. Hunter, at Briton Ferry, near Neath, will show the lands and coal.

For particulars apply to Messrs. Adam Murray and Son, surveyors and land agents, 35, Craven-street, Strand, London.

TO BE SOLD,—FOUR-SIXTEENTHS in the ROYAL GEORGE LEAD MINES, situate in the parishes of HOLYWELL and WHITFORD, within 1½ mile of Holywell. The mines are held under the Most Noble the Marquis of Westminster, at a royalty of 20s. per ton; the present workings are free from water, and the present extent is 17 acres, with an additional 30 acres, if required—the present depth of workings is 84 yards from the surface. The mines are situate within a quarter of a mile of the Great Clwt Melitia, where thousands of tons of very rich ore have been raised. The advertiser would not dispose of the above shares was it not for want of cash to sink the new pit. There has been two lodes of fine ore discovered, and he is anxious to sink a new pit, as it is supposed there are rich lodes of ore very near the surface. 10

For terms and further particulars apply to William Ramsden, mine agent and surveyor, Greenfield, Holywell, Flintshire.

TO IRONMASTERS, COALMASTERS, MINE ADVENTURERS, AND OTHERS.—TO BE SOLD, BY PRIVATE CONTRACT, a valuable COLLIERY, at BRYMBO, near Wrexham, in the county of Denbigh, held under several leases, as under—viz.:

The VRON ESTATE, 25 years unexpired, and containing about	80	acres.
TYCERRIG ESTATE, ditto ditto	80	,,
PENRHOS and the COLLEGE, 17 years unexpired, ditto	61	,,
	221	acres.

All contiguous to each other, and enclosed in a ring fence. The seams of coal are as under—viz.:

Drowgy Coal	2	0	inches thick.
Drowsal Coal	2	9	,,
Powell Coal	5	0	,,
Two Yard Coal	6	0	,,
Crank Coal	1	8	,,
Brassy Coal	5	6	,,
Black-bed Coal	1	1	,,
Main Coal	9	0	,,
Yard Coal	3	0	,,

11

And numerous beds of Ironstone.

A small quantity of Drowgy Coal, Two Yard Coal, and Brassy Coal have been worked; the other seams are untouched.

An engine pit has been recently sunk to the Two Yard Coal, and there are three other pits down to the Brassy, and two down to the Drowgy Coal.

A powerful mine pumping-engine, the cylinder 63 feet diameter, has been erected, and also three winding engines.

This colliery immediately adjoins the Brymbo Iron-Works, where the raising of coal and the manufacture of pig-iron has been successfully carried on for a great many years; and the good quality of the coal and iron produced extensively made known. This colliery offers great facility for the erection of iron-works, which may be carried on to a great extent.

A branch from the Shrewsbury and Chester Railway has been recently completed to this colliery, by which the produce can be conveyed at a light expense to Shrewsbury, Chester, Birkenhead, and Liverpool, and all parts of the kingdom, and also shipped upon the River Dee at Saltney, for Ireland and elsewhere.

This colliery is offered for sale in consequence of the illness of the present proprietor, and offers advantages to an enterprising individual or company seldom to be met with.

Application to be made to William Rowe, Esq., Mount-street House, Wrexham.

TREBARVAH MINES, situate in the parish of PERRANUTHNOE, in the county of CORNWALL.

Consisting of 2048 shares.

CONDUCTED UPON THE COST-BOOK PRINCIPLE. 12

The Trebarvah Mines are situated within two miles of Marazion, and the port from whence the produce will be shipped. They are also contiguous to the Great Wheal Neptune Mine, which formerly yielded monthly profits of from £1500 to £2000, and for many years was one of the most productive mines in Cornwall. The sett is very extensive, being fully a mile in length on the course of the lodes, by half a mile in width, and is held under leases for 21 years, at 1-18th dues.

There are several lodes in this sett, two of which only have been worked upon, running parallel to, and being distant about 70 fathoms from each other—the one to the north possessing the usual indications of rich copper lodes found in this district. Large quantities of tin have been already extracted from its back, and recent discoveries justify the conclusion that much more may be obtained at a comparative small outlay. This lode has been intersected at a depth of 22 fathoms from surface by an adit level driven in from the cliff, and extending about 80 fathoms on its course. A shaft has been sunk from surface 10 fathoms below this level, and a level driven east on the course of the lode to meet a winze sunk 17 fathoms below the adit, 30 fathoms east of the said shaft. In the course of these operations the lode from the adit level downwards increased in size and productiveness, and the quality of the ore improved.

The south lode is large and has yielded blende, mundic, and copper ore, the latter, according to the best mining authorities, will be found to improve both in quantity and quality, a few fathoms only below the present workings, and at a shallower depth west of the present ends, from the ground undergoing an entire change (just previously to the works being suspended), the price for driving having been reduced from 7l. 10s. to 2l. 10s. per fathom, which is, from analogy in the district, highly indicative of the productiveness of the vein.

These lodes, as well as others traversing the sett, are intersected by three known slides and a cross-course, at intervals of from 33 to 60 fms.; the beneficial influence of which on mineral deposits is fully established by experience.

Up to August last year the prosecution of the works had incurred an outlay of about 10,000l.; when, notwithstanding that the returns of mineral were fast increasing, and nearly covered the current expenses of the undertaking, it was determined, by the holders who had paid up the calls made upon their respective shares, not to continue working any longer for the benefit of several shareholders who were defaulters to the extent of 1800l. and who would not contribute their proportion of the cost towards bringing the mine into paying condition.

It is now arranged to resume operations with efficient machinery, and under a practical management possessing the advantage of experience derived from the actual working of the mine. Upon a careful calculation, it is estimated that a 30-inch cylinder steam-engine will enable the workings to be carried down to a depth of 80 fms. below the adit level; and it is ascertained that copper ores can be raised at the low tribute of 5s. in the 1l. as soon as the engine-shaft shall have been sunk to the 20 fm. level.

The capital for these purposes is proposed to be raised by the disposal of 1024 shares at 3l. per share to be paid by instalments as follows:—

£1	per share on the	15th August 1849.
10s.	ditto	ditto 15th October 1849.
10s.	ditto	ditto 15th December 1849.
10s.	ditto	ditto 15th February 1850.
10s.	ditto	ditto 15th April 1850.

upon payment of which the holders will participate in the advantages of the association in the same proportion as the original proprietors.

Applications for shares to be made to the secretary, at the offices of the company, No. 2, New Broad-street, and also to Mr. Tredinnick's mining offices, Three King-court, Lombard-street, of whom further particulars can be obtained.

WANTED,—A SITUATION as MINERAL AGENT, by a person who has had considerable experience in mining operations in Wales.—Applications to be addressed "D.," care of the Editor of the *Mining Journal*, No. 26, Fleet-street, London. 13

WANTED,—A TRAVELLER, who understands the IRON TRADE in all its branches. Satisfactory testimonials will be required.—Apply to John Sturges and Co., Bowling Iron-Works, Bradford, Yorkshire.

August 11, 1849. 14

TO CONTRACTORS AND MINERS.—CONTRACT FOR WORKS.—TO BE LET, the EXECUTION of about ONE MILE of TRAMWAY, near ULVERSTON.—The works, in addition to considerable rock cutting, will include 400 yards of heading, 5 feet by 7 feet 6 inches, to be driven through limestone.

For particulars apply at No. 17, Great George-street, Westminster, or at the Railway Office, Barrow.—July 30, 1849. 15

TO ENGINEERS.—An ENGINE MANUFACTURER, in WARWICKSHIRE, having accepted an offer to go abroad, is desirous to PART with his BUSINESS at CHRISTMAS—the same having been carried on successfully for 20 years. The lathes, foundry, smitheys, and fixtures to be taken at a valuation, which will not exceed £2000.—Apply to James Boydell, 54, Threadneedle-street, where plans of the premises may be seen. 16

ENGINE FOR SALE, BY PRIVATE CONTRACT—A 40- inch cylinder ENGINE, with boiler, about 10 tons, in excellent condition; it is situated within 2 miles of a sea-port.—Also FOUR HUNDRED TONS of PITWORK, of various sizes, and several CAPSTANS, SHEARS, ROPES, and CHAINS.

For further particulars apply to Mr. Henry Burgess, Camborne, Cornwall. 17

STEAM-ENGINE WANTED.—WANTED, a SECOND-HAND CONDENSING STEAM-ENGINE, of 30-horse power, adapted both for PUMPING and WINDING.—Also a BOILER (on the Cornish principle) to suit. They must be in good condition.—Apply, by letter, giving full particulars, and stating the lowest price, to William Muschamp, Derwent Lodge, Sunderland. 18

MANCHESTER CORPORATION WATER-WORKS.— TO BRASS AND IRONFOUNDERS, MACHINE MAKERS, &c.—The Mayor, Aldermen, and Burgesses of the Borough of Manchester, are prepared to RECEIVE TENDERS for the SUPPLY of a considerable number of STREET COCKS, FIRE COCKS or HYDRANTS, and AIR VALVES, in connection with the supply of the borough with water.—Specifications may be obtained at the office of Mr. J. F. Bateman, civil engineer, 46, Brown-street, Manchester.

The tenders, endorsed "Tenders for Street Cocks," must be addressed to, or left with, Mr. Joseph Heron, Town Clerk, Manchester, on or before the 1st day of Sept. next.

By order, JOSEPH HERON, Town Clerk.

Town Hall, Manchester, July 27, 1849. 19

MINING PROPERTY.—Mr. JAMES HERRON, MINE AGENT, 33, CLEMENTS-LANE, LOMBARD-STREET, has received instructions to DISPOSE of SHARES in FIRST CLASS MINES, paying regular dividends, and yielding to the purchaser from 17½ to 25 per cent. upon his outlay. He is also in a position to transact business in the following—viz.; Treviskey, Trelawny, Treleigh, Tincroft, Tamar, East Wheal Rose, North Roskear, West Caradon, Great Devon Consols, Condurrow, Bedford, South Tamar, St. John del Rey, Copiapo, Rymney Iron, Alton, and United Mexican. 20

MR. HENRY VATCHER, MINING AND RAILWAY SHAREBROKER, EXETER.

Competent and experienced AGENTS provided to INSPECT MINES, at the shortest notice. 21

MR. EVAN HOPKINS, C.E., F.G.S., CONSULTING ENGINEER AND INSPECTOR OF MINES,

May be CONSULTED DAILY (by letters) on all subjects connected with MINING PROPERTY, both Home and Foreign.

BARRINGTON-ROAD, BRIXTON. 22

MR. C. S. RICHARDSON, CIVIL ENGINEER, LAND AND MINING SURVEYOR,

No. 15, OLD BROAD-STREET, CITY. 23

JAMES LANE, MINING SHARE DEALER, 80, *OLD BROAD-STREET, LONDON.* 24

AUSTRALIAN MINING COMPANY.—The board of directors hereby give Notice, that they have made a CALL of ONE POUND per share on the registered shares in the company, to be PAID on or before the 21st day of August, 1849, to the company's bankers, Messrs. Masterman, Peters, and Co., Nicholas-lane, Lombard-street, London. Interest, at the rate of 5 per cent. per annum, will be charged on all calls not paid on or before the 21st day of August. The call letter must be presented at the bankers' at the time of payment.

N.B.—The transfer books of the company will be closed from Saturday, the 4th of August, until Thursday, the 6th of September.

By order of the board,
(Signed) J. A. JOSEPH, Secretary.

1, Adelaide-place, London-bridge, July 31, 1849. 25

LLYNVI IRON COMPANY.—Notice is hereby given, that the ADJOURNED GENERAL MEETING of the shareholders of this company will be HELD at their offices, Old Jewry Chambers, on Thursday, the 16th inst., at Twelve o'clock precisely, for the election of a director.

By order of the board,
F. W. GIBBON, Secretary.

London, August 6, 1849. 26

DUISBURG IRON-WORKS AND MINES, *IN WESTPHALIA, CLOSE TO THE RHINE.*

Managed in England according to the principles of the "Cost-book System," and in Prussia as a *Société in Commandite*, under laws limiting the liability of the shareholders to their personal subscription.

Company's Offices, 28, Moorgate-street, City. 27

DEVON.—HENNOCK IRON, STEEL, AND TIN MINING COMPANY.

ON THE COST-BOOK PRINCIPLE.

BANKERS—Devon and Cornwall Bank, Exeter and Newton Abbott.
SOLICITORS—Messrs. Kennaway and Buckingham, Exeter.

Capital £9450, in 4500 shares, at £2 2s. each, without further calls or liability.
Deposit £1 1s. per share. 28

The promoters of this company propose to raise the above capital to work efficiently these very valuable mines of micaceous iron and tin ore, situate in the parish of Hennock, 12 miles west of Exeter, and 2 from Bovey Tracey, on the confines of Dartmoor.

These mines are not a new discovery, but possess the advantage of having had their merits tested to an extent that fully establishes their great capabilities, and warrants the expectation of a large trade at a highly remunerating profit.

Prospectuses and particulars supplied on application (if by letter, post-paid) to Mr.; Tripp, Bedford Chambers, and of Mr. T. Sanford, Exeter; Mr. H. Luscombe, Plymouth; Mr. B. S. Stock, Bristol; Mr. C. P. Cameron, Liverpool; Mr. J. Lane, 80, Old Broad, street, Mr. Herron, 33, Clements-lane, and at the office of the *Mining Journal*, No. 26 Fleet-street, London.

INDURATED AND IMPERVIOUS STONE, CHALK, &c. —AGENTS, with capital, are WANTED in all TOWNS to SUPPLY (under British and Foreign Patents) the great demand for HUTCHISONISED MATERIALS—hard as granite, impervious to moisture, vermin, &c.; the cheapest and most durable for all buildings, hydraulic, paving, monumental and decorative work.—The profits are large.

Apply to HUTCHISON & CO.,
East Temple Chambers, London, or Tunbridge Wells, Kent, stating name, address, and capital at command. 29

N.B.—Houses cured of damp. The produce of soft stone quarries, chalk, plaster of Paris, wood, pasteboard, and all absorbent materials indurated to resist frost, vermin, &c.

LICENCES GRANTED.

BICKFORD'S PATENT SAFETY FUSE.—The Patentees of the ORIGINAL, and only real, SAFETY FUSE, beg to inform Merchants, Mine Agents, Railway Contractors, and all persons concerned in Blasting Operations, that, for the purpose of protecting the public in the use of a genuine article, the PATENT SAFETY FUSE *has now a thread wrought into its centre*, which being patent right, infallibly *distinguishes it from all imitations*, and ensures the continuity of the gunpowder. The Safety Fuse is now protected by a Second Patent, and manufactured by greatly improved machinery. BICKFORD, SMITH, & DAVEY, Camborne, Cornwall. 30

STRUVE'S PATENT MINE VENTILATOR. TO COLLIERY PROPRIETORS

Quantity of air passed through a Mine almost unlimited, to the extent of 200,000 cubic feet per minute, if necessary—depending on size of apparatus.
No injury to pumps, pubbing, chains, ropes, or pitwork.
Goaves kept clear.
Not influenced by barometrical and thermometrical changes in the atmosphere, or by wind
Current of air undeviating.
LICENSES will be GRANTED on application to
Mr. WILLIAM PRICE STRUVE, C.E., Swansea. 31

The ventilator has been erected at the Eaglesbush Colliery, near Neath, and is perfectly efficient, and may be viewed on application to the proprietors, Messrs. Penrice and Evans, Neath.

GUAGE OF RAILWAYS IN AUSTRALIA AND THE COLONIES.—It has been determined, on the recommendation of the railway commissioners, to adopt the national, or narrow guage, of 4 feet 8½ inches, for railways in the Australian colonies. The commissioners, in their reports to Lord Grey upon this subject, state that they believe the gauge of 4 feet 8½ inches will be found sufficiently wide for all the requirements of newly-settled colonies for a long period, and that as the Australian colonies will, most probably, be for some time dependent on the mother-country for the working stock of their railways, there will be an advantage in being able to order engines exactly similar to some of those in use in this country. They are of opinion, at the same time, that where it is necessary to provide for a large passenger traffic, and speed exceeding 40 miles an hour is to be obtained, the wider gauge, by allowing a greater evaporative power to be given to the engines, would afford an advantage. This was in reply to a proposal by Lord Grey for adopting the 5 ft. 3 in., or Irish gauge.

ASSURANCE OF RAILWAY TRAVELLERS.—This new system of life assurance, in the event of railway accident, is now in operation over the London and North-Western and Lancashire and Yorkshire railways. It commenced with the present month. The assurance tickets for the single journey, irrespective of distance, are obtained at the same time that the passenger pays his fare and takes his ticket. The first-class passenger paying 3d., insures 1000*l.*; the second-class paying 2d., 500*l.*; and the third-class passengers 1d., 200*l.*, the amount, in the event of loss of life, to be paid to their representatives; and they are entitled to compensation in cases of personal injury. It is understood that tickets will be procurable next week over the Lancaster and Carlisle, North British, Caledonian, Edinburgh and Glasgow, Chester and Holyhead, Eastern Counties, Cockermouth and Workington, Stockton and Hartlepool Railways; and that arrangements are in progress to afford the same accommodation to the travelling public on the other lines as speedily as possible. This is as it should be, and evinces a vigorous determination on the part of the Railway Passengers' Assurance Company, to carry out the system so advantageously adopted, that will, no doubt, obtain universal patronage.

HUDDERSFIELD AND MANCHESTER RAILWAY.—This line, which has just been opened, reduces the distance from Leeds to Manchester to 42½ miles, while by the old railway the distance is 62 miles. The town of Huddersfield is also brought within 208 miles of London, and important facilities are given to a vast extent of local traffic. It passes through a most difficult country, and though full of formidable works, has been completed in a short time and at moderate expense. It has been little more than two years in progress, and contains one tunnel of more than three miles in length, being the longest in the world, at a depth of 652 ft. below the ridge of the hill which it pierces, 77 bridges, 7 viaducts, and 4 tunnels. The great tunnel is a most successful piece of work, and so perfectly straight, that on a clear day one can see through it from end to end.

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REVIEWS OF THE WORK.

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BY SAMUEL LA'MERT, M.D., 37, BEDFORD-SQUARE, LONDON.

Doctor of Medicine, Matriculated Member of the University of Edinburgh, Licentiate of Apothecaries' Hall, London, Honorary Member of the London Hospital Medical Society, &c.

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The Public Works of England.

No. III.—DOCKS.

Necessitas mater artium. These most useful establishments were, in many instances, the last adopted in the most important commercial towns. The reason is that the most important towns were established in favoured situations where the absolute necessity for docks was the latest felt. Dry docks, for the mere purpose of constructing vessels, are, of course, of very ancient date, and are to be found everywhere; but wet docks, for the purpose of giving vessels when arrived at their destination a safe receptacle and easy means of loading and unloading, are of singularly recent date. The Mediterranean, in its tideless waters, stood in comparatively little need of such convenience. Thus while Venice, Genoa, Leghorn, Marseilles, were totally without docks, some of the towns on the Baltic, of much less commercial importance, possessed docks of excellent construction. On the same principle in our own country, London was anticipated by many second-rate seaports. Liverpool, at a time when it bore a very low rank amongst our commercial towns, first established the dock system in Great Britain. In those days no one could ever have dreamt of the North American trade. Liverpool owed nothing to its near position. The advantage of its proximity to America was an after-accident. The energy probably of a few private individuals, instituted a scheme which totally altered the commercial balance of the empire. To some accidents of private conduct is due in like manner the arrangement and position of most of our great emporiums, for whatever celebrated—whether for art, industry, commerce, or education.

The shifting of the sands in the Mersey, however, and other disadvantages of the harbour, rendered docks more necessary at Liverpool than in most other places. The first Act for this purpose in Liverpool was obtained in 1708. The management was invested in the Corporation for a term of 21 years. That body gave 4 acres of land, and were authorised to borrow 6000*l.* The old dock was thus constructed, covering an area of somewhat more than 3½ acres. In 1717 the term was extended by 16 years, and the Corporation empowered to borrow an additional 4000*l.* In 1737 a new Act gave a further prolongation of the term, an additional dock permitted to be constructed, and a new power given of borrowing 6000*l.* By 1761 another dock was wanted, and 25,000*l.* more was permitted to be borrowed. In 1784 two more docks were granted, and the power of borrowing 70,000*l.* In 1799 two more docks and a further loan of 120,000*l.* were authorised. The Corporation contributed the necessary ground. The aggregate sums thus authorised amount to 231,000*l.* for seven docks. The dock dues, which in 1724 amounted to 810*l.* 11s. 6d., reached above 10,000*l.* in 1790, and above 100,000*l.* in 1818. The number of vessels, which in 1760 was 1245, reached 10,000 in 1824.

The area covered by these docks varies, from the first, or "old" dock, which, as we have stated, occupies 3½ acres to the Queen's Dock, which covers about 11 acres Besides the docks, there are six basins, covering from 2 to 4 acres each. The construction of most of the docks, especially that called the Prince's Dock, is of the most solid description. The offices are splendid, cast-iron sheds are built round it, and a spacious parade runs along one side.

More recently the Brunswick and Birkenhead Docks have been built. Of the latter the fortunes are not yet developed; the vicissitudes of this undertaking have hitherto been considerable. They are designed upon the most magnificent scale, and may probably have to wait for some years until the inevitable expansion of British commerce under an increasing population, and the blessings of free trade, may call into use the vast area and superb appliances which they offer to the merchant and the shipmaster.

The next in order of time were the Hull Old Docks, which were commenced in 1774, on the site of the old fortifications. The area of dock, quay, &c., is above 30 acres; that of the dock itself, 10 acres. Rennie, the engineer, had many difficulties to encounter in the loose nature of the soil. The first dredging machine ever employed in England was constructed by him for the use of these docks. This was one of the most profitable undertakings of the kind in the hands of shareholders, the docks at Liverpool, like those at Bristol, being the property of the Corporation. The original number of shares was 120; that number has since been increased to nearly 200. In 1806, previous to the increase, the dividend was no less than 72*l.* 15s. 10d. per share, but it sensibly diminished afterwards. Hull New Docks were built in 1807. The area is about 7½ acres.

Up to the beginning of the present century, the city of London had no docks at all. In fact, several interests were in the way—the proprietors of the various wharfs above and below the bridge were against any scheme of dock building, and various projects for the improvement both of the legal quays and the sufferance wharfs were proposed in opposition. The legal quays were, however, only 1464 feet long altogether, and occupied precisely the same positions that they did at the time of the great fire of London, while the imports from the port had, from the year 1700 to 1792, increased from 4,795,538*l.* to 12,073,674*l.*, and the exports from 5,387,787*l.* to 14,742,516*l.*

In the year 1793, a plan was first projected of making wet docks at Wapping, the Isle of Dogs, or Rotherhithe, the preference being given in the first instance to Wapping, on account of its proximity to the city. This first plan contains the germ of almost all that has been carried out since. In 1794, a general meeting of merchants took place, when a committee was appointed to examine the matter, and a report was drawn up, recommending the construction of docks at Wapping. In consequence, a well-known engineer, Mr. Daniel Alexander, who had been previously employed about the river, was directed to make a survey, and to prepare plans and estimates for constructing the proposed Wapping docks, with a cut and canal leading to them along the site of the present East and West India Docks. The plans and estimates were prepared accordingly, and laid before another general meeting of merchants on December 22, 1796, when a subscription of 800,000*l.* was filled in a few hours, for the purpose of carrying the plan into execution. In fact, projects of this kind were at the time eagerly listened to. It was the great year for canal schemes. A petition was presented to the House of Commons, who appointed a select committee "to inquire into the best mode of providing sufficient accommodation for the increased trade and shipping of the port of London." In this committee a variety of objections were raised, and plans proposed for constructing docks in all sorts of places. It took two or three years to overcome these difficulties, and the final petition to the House was not presented till December, 1798. A few days afterwards a petition was presented by the Corporation with similar objects, and with the additional plan of cutting a navigable canal from Blackwall to Limehouse, and constructing wet docks in the Isle of Dogs, for the West India shipping. The West India merchants had, however, apart from the Corporation, already projected a competing plan to that of the last proposition. The Corporation and the companies united at last, and all difficulties were overcome. The Act for the West India Docks was passed in 1779—that for the London Docks in the next year—and the Act for the East India Docks in 1803. All these projects arose out of the original scheme for the London Docks, which scheme was carried out simultaneously in all its fulness, though under the management of three separate companies, and appearing as three distinct undertakings.

The London Docks were constructed under Rennie's superintendence. The Act allowed seven years for its completion; it was opened in five, but was not completely finished for some time afterwards. A capital of 300,000*l.* was authorised, five per cent. interest guaranteed and 10 per cent. fixed as a maximum. Proprietors of 500*l.* to 1000*l.* have one vote; of 1000*l.* to 5000*l.*, two votes; of 5000*l.*, to 10,000*l.*, three votes, and proprietors of more than 10,000*l.* have four votes, which is the maximum. The dock-rates were fixed by the Act at per ton:—For vessels trading between the ports of Great Britain (including the Scottish isles), 1s. For traders to Ireland, the Channel islands, France, from Ushant to Dunkirk, Flanders, Germany, and Denmark, to Elsineur, 1s. 3d. North of Elsineur and the Baltic, 1s. 6d. South of Europe to Cape St. Vincent, the Azores, &c., 1s. 9d. Europe south of Cape St. Vincent, Africa, America, South Seas, 2s. Eastern Asia, 2s. 6d. All vessels arriving with more than 20 pipes of wine or brandy are obliged to enter the docks. Six weeks are allowed for unlading, beyond which a charge of a ¼d. per ton is made for the first two weeks, and a ½d. per ton afterwards. All vessels, except those devoted to the East and West India trades, are allowed to enter the docks, without distinction of nation. Wine, spirits, and tobacco, form the principal cargoes delivered at the docks. Ranges of warehouses have been erected for the reception of these articles—those for tobacco are of very fine construction. The superficies occupied by the warehouses in general amounts to 120,000 square yards. The dock itself is 420 yards long, 276 broad, and 29 feet deep. It occupies a surface of 25 acres, and the basin 2½ acres. The whole premises, including warehouses and quays, contain a superficies of 110 acres. It is estimated to hold about 230 ships of 300 tons. The tobacco warehouse, underneath which are wine cellars, covers five acres—the greatest extent of any one roof in the world, unless we except the Great Pyramid.

The West India Docks, the most magnificent in the world, were begun in July, 1800, and opened for the reception of vessels in September, 1802, in the short space of 27 months. Mr. William Jessop was the engineer. The prosperity of these docks in former days was prodigious. The original capital was 500,000*l.*, afterwards raised to 1,200,000*l.* The revenues of the company in 1809 amounted to 330,623*l.*, and in 1813 they reached their climax, amounting to 449,421*l.* Since that time the depreciation of the West India trade has caused a sad decline in this magnificent income. Up to 1818, the company, besides paying the maximum dividend of 10 per cent., had accumulated 800,000*l.* as a reserve fund, but they were obliged to devote a part of this sum to dividend very soon afterwards. The annual expenses alone of the establishment amounted in 1819, to 151,644*l.*, of which above 50,000*l.* went to workmen, above 40,000*l.* to building and improvements, and 13,320*l.* to taxes, an enormous impost. The cooperage materials are set down at 16,766*l.* in addition. The management of the company is in the hands of 21 directors, eight of whom must belong to the City Corporation. Four directors go out in each year, except the fifth, when five go out of office. Only shareholders holding above 500*l.* are entitled to vote. The nature of West Indian produce has rendered necessary the construction of the sheds and warehouses on the most careful principle. The pillars of the whole, and the framework of the roof of some of the sheds, are of cast-iron, most ingeniously constructed. The great difficulty is to guard against contraction or dilatation by cold or heat. To remedy this, the iron beams which run from one pillar to another, are not actually in contact, and a longitudinal play is thus allowed to the structure, which prevents any mischief from the alteration of temperature. The pavement is partly of iron and partly of granite, and the mechanical contrivances are of the most excellent kind. The docks are in two divisions, the export and the import. The import dock is 2600 feet long, and 500 feet broad, and estimated to hold 204 vessels of 300 tons each. The export dock is of the same length, and 400 feet broad; it holds 198 vessels. There have been deposited in the sheds and warehouses at the same time 148,563 casks of sugar, 70,875 barrels and 433,648 bags of coffee, 35,158 pipes of rum and Madeira, 14,021 logs of mahogany, and 21,350 tons of logwood. The reader may conceive the economy of room necessary for the reception of such a mass.

The City Canal enables vessels to enter the docks without making the circuit of the Isle of Dogs, but in most instances the captains save the charge and go round the bend. The canal serves as a receptacle for ships laid up in ordinary; its long range of a mile presents a magnificent spectacle of masts and shipping, when viewed from the river. The depth of water in the docks at high tide is 24 feet. The area of the import dock is above 30 acres; that of the export about 25 acres. The docks, basins, and locks, altogether, include an area of 68 acres, and the total superficies, if we include quays, and warehouses, amounts to 140 acres. The 68 acres of excavation form a work in its way unrivalled by any in existence.

The East India Docks were not commenced until 1805, though their Act passed in 1803. The first ship entered them in August, 1806, 17 months after their commencement. Their capital, originally 200,000*l.*, was subsequently doubled. The number of directors is 13, who must each hold 20 shares in the stock of the company, and four of them must be directors of the East India Company. This forms almost the only connection which the East India Company has with the docks. The possession of five shares gives a right of voting. The immense value of East Indian produce, and of the cargoes of the vessels engaged in the trade, causes a different arrangement in these docks from either the London or West Indian. The docks, in the first place, are much smaller; as fewer vessels are engaged in the oriental commerce, and as they are much longer on the voyage, they will be in dock a proportionably shorter time to the period they spend at sea. Then, the value of the property prevents its being allowed to remain on the spot. The warehouses are four miles off, and the cargoes are immediately delivered to the merchants. The company subscribed 10,000*l.* to the Commercial-road, which was originally constructed as a thoroughfare from the docks to the city. There is, likewise, much greater restriction in the admission of visitors to these docks than to any of the others. Business commences later in the day, and the doors are punctually closed at three in the winter, and four in the summer months. The depth of the East India Docks is greater than that of the rest, on account of the size of the vessels in the trade, which draw more water than any merchant vessels. The depth, accordingly, is never less than 23 feet, or, as measured from the surface of the quays, is 27 feet. The superficies of the export dock is 10 acres, of the import dock 19 acres, which, with 3 acres for the basin, makes a total surface of 32 acres. The carriages used to convey the merchandise from the docks are of a peculiar construction. They look something like a gipsy caravan; the door is behind, and secured, besides its lock, by bars of iron. Long before the construction of the East India Docks, an old dock, called Perry's Dock, stood on the site; it was a private affair, but of great use to merchants. Greenland Dock, on the other side, was likewise an old private dock.

It was estimated that, before the construction of the great docks just described, the loss by robberies alone exceeded the hundredth part of the whole importation of wines, tea, indigo, cocoa, &c.; the fiftieth of the sugar, and the fortieth of the rum. The value of the loss during the years 1799, 1800, and 1801, was estimated to amount to 1,214,500*l.* The estimate of the saving to the present increased commerce of the country would be quite enormous.—*Daily News.*

THE CONWAY AND BRITANNIA BRIDGES.

Claims and counter-claims for originality in nearly all scientific adoptions are of such common occurrence, that we rarely hear or read of any discovery or new application in mechanical arrangement, that we may not expect to find a host of claimants to the parentality of the idea; it is not, then, with any surprise, though with much regret, that we find those eminent men, the designers and constructors of the above novel engineering works, in whom the public have put much confidence, and who have completed many great national works, still keeping the question painfully alive in the public mind as to with whom the original idea of the tubular form for these bridges first originated, and how much of the honour of the entire erections are due to each. Mr. Fairbairn, considering that various public statements made at different times by different individuals, either entirely passed over, or concealed, the real nature of the services he had rendered, called for some public assertion of his claims, has laid before the public *An Account of the Construction of the Britannia and Conway Bridges, with a Complete History of their Progress, from the conception of the Original Idea, to the conclusion of the Elaborate Experiments which determined the Exact Form and Mode of Construction ultimately adopted*, published by John Weale, High Holborn. This volume, as an engineering essay and full description of the progress of these interesting works, is worthy of the source from whence it springs, but in its controversial character we do not think its author has been so happy; some of his statements and deductions appear to us not consonant with facts, though we entirely acquit him of any intention to misrepresent circumstances, nor can we imagine what it is exactly Mr. Fairbairn is striving to convince the public of, more than the opinion which we believe the majority have ever entertained—that the originality of the idea belongs to Stephenson, and that Fairbairn's actual experiments, guided by Hodgkinson's mathematical deductions, confirmed the shape of the tube, the thickness and arrangement of the materials, and the mode of construction. Mr. Fairbairn has published the whole of the correspondence on the subject since April, 1845, glancing through which, and from his own observations, we can come to no other conclusion, than that such position of facts is the correct one. To prove that the idea of a tubular form of bridge, or large hollow girder, originated with Stephenson, we will take Mr. Fairbairn's own language in the first page of the work, in which he at once concedes it. He says—"In the construction of the Chester and Holyhead Railway two formidable obstacles had to be overcome; the deep and rapid tidal streams at the Conway and Menai Straits had to be crossed by bridges, which must necessarily be of extraordinary span, and of great strength. No centerings or other substructures, such as are usually resorted to for putting such massive structures together, could be erected. Under such circumstances, the most obvious resource was a suspension bridge, but the failure of more than one attempt had proved the impossibility of running heavy trains over bridges of that class with safety. Some *new* expedient of engineering was, therefore, required, and an engineer bold and skilful enough to conceive such an expedient, and to apply it. *That engineer was found in* Mr. ROBERT STEPHENSON, and that expedient is the one the history of which it is the object of the following pages to relate." When it was found that the Lords of the Admiralty refused to consent to any scheme which did not give a clear headway of 105 feet, Mr. Stephenson conceived the idea of a huge rigid tube, to be constructed of iron plates rivetted together, and supported by chains. Mr. Fairbairn claims to himself the idea of rendering the tube self-supporting, and states, that Stephenson "was strongly impressed with the primary importance of the use of chains, placing his reliance on them as the principal support of the bridge, and he never for a moment entertained the idea of making the tube self-supporting." He would impress on the public, that Mr. Stephenson's idea was for a suspension bridge rendered rigid by constructing it in the tubular form; but never was statement more incorrect, as will appear from the following extracts of his evidence given before the Parliamentary Committee on the 5th and 6th May, 1845. He says—"Perhaps I may at once explain to the committee the idea I have adopted. I conceive a tube—supposing a wrought-iron tube—to extend across the straits; that that tube—say 25 ft. diameter—to hold a line of railway, and the line of railway would run inside of it. In addition to that, we should have to erect a chain platform for the purpose of the building. *Then the question would arise, whether the chains would be allowed to remain, or whether they would be taken down. My own opinion is, that a tube of wrought-iron would possess sufficient strength to support a railway.* I am instituting a series of experiments with Mr. Fairbairn, of Manchester—in fact, he is already in possession of experiments with respect to iron ships which place the thing beyond a doubt. He has ascertained that a vessel of 250 ft. in length, supported at the ends, will not yield with all the machinery in the middle." The attempt of Mr. Fairbairn in this publication to claim the principal merit of the construction, at the expense of his colleagues, is, to say the least of it, ill-advised; he was originally selected by Mr. Stephenson to experiment on the strength and rigidity of iron tubes, to carry out a certain idea, and although afterwards appointed engineer to the works, we think it too much, not only in his being discontented at the amount of honour which the public are willing to award him, but to endeavour by the publication of *private* correspondence, and a somewhat sinister mode of stating circumstances, to grasp at that which is so essentially due to others. How much more conducive to the real interests of science had the two principal experimenters acted in concert, and profited by each other's suggestions, than thus raising a discussion as to points of priority, which can end with additional credit to neither party. We state, as we have often done before, our conviction that the origin of the idea is with Robert Stephenson, and that an equal share of credit is due both to Fairbairn and Hodgkinson, for the highly-successful manner in which this idea has been practically carried out. The facts are before us and the public; and from those facts, however they may be perverted, no other sane conclusion can be come to. The descriptive portion of the work is of the most elaborate character, and giving all the details of the numerous experiments on iron tubes of different shapes and under varying circumstances, with the construction of the bridge tubes themselves, illustrated by numerous well-executed diagrams, appears to us calculated to become a standard engineering work, not only for such particular constructions, but as exhibiting for numerous applications, in which this form has never yet been used, but in which it might be with undoubted success

THE STEAM FORCE OF ENGLAND.—The following is a late official return of the steam-vessels and horse-power belonging to the royal navy, whether in commission, in ordinary, or actually building. The return is as follows:—Available for war purposes, four line of battle, 1800 horse-power; 23 frigates, 11,759 horse-power; 48 sloops, 14,862 horse-power; 28 gun-vessels, 3906 horse-power—total, 103 of 32,327 horse-power; and of these only six, 3280 horse-power, are in course of being built. The following is the total number of steamers in troop-ships, tenders, yachts, tugs, and packets:—three troop-ships, 520 horse-power; 9 tenders, 681 horse-power; 6 yachts, 1100 horse-power; 11 tugs, 740 horse-power; 32 packets, 6620 horse-power—total number, 51; horse-power, 9640.

THE SMOKE NUISANCE.—"Anti-Smoke" writes—"Had Alderman Copeland visited the Thames-tunnel steam-engines, he might have saved the several hundreds of pounds which, he says, "experiments" have cost him. The plan was adopted after Messrs. Bryan Donkin, and Co., and Messrs. Learmouth and Co., both in the same neighbourhood, had experienced, not only its prevention of smoke, but the profit of nearly 50 per cent. by the plan. It has been in use at the Tunnel nearly three years; it consumes about the same quantity of coals, but instead of paying from 16s. to 20s. per ton, small coal is bought at from 8s. 6d. to 10s. per ton. To reduce the nuisance of smoke, all furnace chimneys should be at least 130 feet high, by which a great part of the thick black smoke would be condensed and fall to the bottom of the shaft. The difference of high and low chimneys may be seen from either of the bridges. This is not necessary where the apparatus alluded to is used. The difference of the atmosphere at Leeds and other places, where manufacturers have been compelled to erect high shafts, has been very remarkable."

INTERESTING DISCOVERY.—M. Paul Gervais (says the *Constitutionnel*) has just discovered in the upper tertiary stratum of Montpellier a species of fossil ape, probably belonging to the *Macaque* genus. On comparing this discovery with that of M. Lartet in the Gers, and those made in the environs of London, it appears that fossil apes have been discovered in the three principal tertiary strata of western Europe, that is to say, in every part of the level of sedimentary earths in which the bones of mammalia abound. If man had existed at the period when these strata were deposited, the non-discovery hitherto of the slightest trace of human skeletons, or remains attesting human industry, would be very astounding. The discovery of these fossil apes is, therefore, an additional indirect proof of the very inferior antiquity of man on the earth.

HOLLOWAY'S PILLS A WONDERFUL REMEDY FOR BILIOUS COMPLAINTS, INDIGESTION, AND DISORDERED STOMACHS.—Mr. Reardon, of Newcastle, who some time past retired from the legal profession in consequence of ill-health brought on by over-attention to business, causing great debility, nervousness, indigestion, and a complete upset of the biliary system, together with palpitation of the heart, was persuaded by his friends to try Holloway's pills, as all the medical advice that he had obtained was unavailing. He persevered in their use, and attended strictly to the diet as advised, and he is now perfectly restored, and his health is better than it ever was before, although he is in his 65th year.—Sold by all druggists, and at Professor Holloway's establishment, 244, Strand, London. 36

THE PRINCIPALITY OF WALES

BRIEFLY CONSIDERED, WITH REGARD TO ITS PHYSICAL FEATURES, SOCIAL CONDITION, AGRICULTURAL CAPACITIES, GEOLOGICAL STRUCTURE, AND MINERAL RESOURCES.

BY JOSEPH HOLDSWORTH, ESQ., M.G.S.F., &c.

This interesting section of the island of Great Britain—occupying an area of some 8000 square miles, or about 5,000,000 acres—would appear, on the whole, to be but indifferently understood, or inadequately appreciated, by the great majority of the indwellers of the broader and more fertile lands of the kingdom. It there, indeed, is chiefly known and estimated as a wild, mountainous region, resorted to, for the most part, by piscatory wanderers and lovers of the romantic and picturesque, who periodically take their solitary rambles along the mossy banks of its limpid streams, find solace and delight amid its rocky fastnesses, or with eager limb ascend the breezy heights of Snowdonia, to drink in the glories of the chequered scenes around; but, beyond these general notions, *barrenness* and *sterility* are the too predominating associations entertained by the public generally of Wales.

As our own personal rambles and speculative investigations have not only been directed to almost every portion of the principality, but, with very similar views, have been extended over no inconsiderable part of continental Europe, we may venture to express a hope that the following disquisitions, though necessarily of a circumscribed character, will merit the attention of our readers, and leave no slight impression on their minds, that this romantic and diversified region has not only pre-eminent claims on the actual examinations of the enlightened and scientific tourist, but is really possessed of such natural resources, as, under more favourable auspices, must eventually entitle it to rank as one of the most important and invaluable territorial contributors to national usefulness and prosperity, encircled by the British seas.

We may commence our discursive survey by a slight allusion to those predominating features which characterise and diversify, in so remarkable a degree, the surface of the principality.

Though it may properly be termed mountainous throughout its whole extent, its too great north and south divisions are respectively distinguished by many dissimilar and distinctive appliances. Throughout the latter a continuous succession of bold, but sweeping and generally rounded eminences, almost every where meet the eye—being commonly clothed to their summits with verdant pasturage, or devoted to agricultural purposes, and frequently intersected by fertile valleys of meadow and arable land, usually subdivided into small enclosures. Amongst which, as more or less conspicuous for displays of picturesque beauty and sylvan repose, we may enumerate the several vales of the Towey, Tivy, Uske, Rheidol, and Wye. By far the greater proportion of the area of the six counties comprising South Wales is rendered subservient to the purposes of the husbandman. The extensive hilly tracts, especially where more inaccessible to the plough, have their green mantles bespotted over by countless flocks of sheep, herds of small black cattle, or, as particularly on the high and open heaths and downs of Brecknockshire and Radnorshire—with numbers of the proverbially hardy and plucky Welsh ponies.

The county of Carmarthen, consisting chiefly of grazing land, presents, like much of Glamorganshire, a pleasingly undulating surface, which, however, increases in boldness of character as it stretches northward into Cardiganshire, and declines in elevation towards the south-west, terminating in the extensive and tolerably fertile plains of Pembroke. The north-east part of which county is mountainous, but yields good pasturage for sheep and cattle, whilst a broad and extensive zone of the county of Cardigan, adjacent to, and lying parallel with the sea, is, though remarkably hilly, almost wholly under tillage, producing, in many instances, excellent crops of grain.

The various tracts of country just enumerated being, for the most part, pleasingly enlivened and diversified by towns and villages, farmsteads, and country residences, with occasional woods and plantations; this cursory view will sufficiently demonstrate that, whilst the southern districts of Wales are rife in most of the requisite concomitants of rural wealth, they necessarily present much scenery of a peaceful and very interesting character.

In directing our attention from hence to the external features of North Wales, we find that almost immediately after compassing the heights of Plynlimmon, in which the Severn, the Wye, and three other rivers, have their source, or, on crossing the Dovey, a more striking and multiform series of scenery, rises in rude and romantic grandeur before us. The rounded and flat-topped eminences of Cardiganshire and the south are now succeeded by abrupt, lofty, and more compact parallel ranges of slate rock, trending, for the most part, from east to west, and inclosing deep bending vales, which commonly terminate on the shores of the neighbouring bay. Continuing to advance into the heart of Merionethshire, clustering mountains on every hand exhibit a still greater boldness and ruggedness of outline, being hither and thither deeply cleft by narrow and often cultivated valleys; their precipitous acclivities—not unfrequently strewn with huge broken rocks, copses, scattered trees, and thickets, concealing the base of a lofty cliff, or darkening some deep ravine—are ever and anon presenting to the view those novel fantastic phases which constitute the chief charm and fascination of mountain scenery—insensibly stealing on the heart, and attracting the footsteps of the Alpine wanderer, who, if he be a true lover of Nature, will assuredly heed neither time nor toil in the exploration of these, her noble and mystic bulwarks. The majestic form of Cader Idris here peers on high amid a host of lofty, but less pretending, ocean-born aspirants; his dark basaltic frame, indurated and unyielding as one of Vulcan's thunderbolts, bids defiance to the blasts of ages; and whilst his mural sides and serrated back bristle with rugged rocks, and his massive basements pierce the fiery gulph of Hades, we oft behold his hoary brow wreathed with the fleecy clouds of Heaven!

Sweetly ensconced at the foot of the deeply-furrowed slopes of Cader, lies the picturesque vale of Dolgelly; in the centre of which the prettily sequestered little assize town has been securely seated for centuries. The softness and redundant beauty of this little valley presents a lovely contrast with the sublimity and primeval desolation which marks the rocky and stupendous forms around. The upper reaches of the vale, as well as the lower, extending from the town a distance of some 10 miles to the sea at Barmouth, present most delightful interminglings of wild, wooded, and cultivated scenery. The banks of the rapid and sparkling river which meanders through the vale, consist of rich green meadows and pastures, interspersed with gardens, groves, neat rustic cottages, and handsome modern-built dwellings; whilst embowering woods, which clothe the bordering acclivities, greatly enhance the rural beauty of the scene, and impart that finish to the glowing and diversified picture, the absence of which we have but too often to regret in our peregrinations amid the rocky recesses of Cambria. Pleasing alternations of similarly soft and savage scenery continue to greet the eye as we proceed into Carnarvonshire, where, from the extreme wildness and rudeness of the prospects which present themselves on every hand, this mountainous region has not inaptly been denominated the British alps; and in the centre of which the huge conical form of the celebrated Snowdon rises to the height of 3571 feet above the level of the sea. Parts of Ireland, Scotland, and the north of England, may be seen from the summit; and to enjoy these fair prospects, or *eclât* of the feat, the modern tourist rarely quits Snowdonia without paying his *devoirs* to the mighty monarch, who, by the ancient Britons, was held sacred, as Parnassus was by the Greeks.

It would not be in accordance with our present purpose, nor consistent with our circumscribed limits, or we might so far imfringe on the province of the guide book, as to dwell with rapture on the charming contrasts afforded by the natural and sylvan beauties of the neighbouring vale of Conway, tell of the romantic glories of Llangollen's winding and woody recesses, dive into the historic records of many a dilapidated and ivy-clad castle, expatiate on the fertile and peaceful scenes of Clwyd's rock-bound vale, with numberless other such sweetly sequestered "nooks and corners," which, while they yield a ready obedience, and a grateful return to the hand of industry, here and there, gem the wilderness, shining like the sweet Oasis of the desert, amid those bold, stern, and irreclaimable features of Nature, which alike characterise and invest with rare beauty and sublimity the landscapes of North Wales.

The Welsh, as a people, have preserved and fostered their nationality and language in a remarkable degree; as regards the former, it is almost as distinctive in its more prominent characteristics, as is the scenery of the central districts of England from their own most rude and romantic territories. It cannot but appear strange, that this half million of people—in lieu of thus preserving their nationalities well nigh intact—have not become literally absorbed, long ere this, amongst the eighteen millions now constituting the enlightened and rapidly propressing English nation, of whom they may be said not only to form an integral part, but have necessarily for ages been uninterruptedly linked with by the closest and most important considerations of social and political affinity. The English tourist, who, for instance, finds himself surrounded by the wild and barren scenery of some of the remoter parts of Merionethshire or Carnarvonshire, amid a population whose physical development and costume are alike unfamiliar to him, and whose language falls as strange and unintelligibly on his ear as though he was addressed in the vernacular of Kamtschatka, has some difficulty in persuading himself that he is not on his foreign travels, but actually traversing a portion of his own little native isle, intermingling with fellow-subjects, and positively even within a very few hours' ride of the great metropolis!

The Welsh language is derived from the Celts, who in the early days of Rome inhabited Gaul, the British Islands, and parts of Spain and Italy, and who at present are the natives of the greater part of Ireland, the Highlands of Scotland, and the Isle of Man, calling themselves "Gael;" and the people of Wales, Cornwall in England, and Brittany in France, who are termed "Cymry." Those two divisions of the Celtic family have distinct dialects of their ancient language, which they all still retain, except the Cornish, who lost theirs in the beginning of the last century, after having been on the decline for generations. The last who spoke it were the fishermen and market-people about the Land's End. Notwithstanding, however, the pertinacity with which it is still preserved in Wales, it is not unreasonable to suppose that such may be its fate here also at no very remote period—a consummation which it would appear rather desirable to hasten than to retard, at all events, as regards the exclusive use of the Welsh tongue by the poorer classes, the great majority of whom are wholly unacquainted with the English language. It is ascertained that, in Cardiganshire, only 3000 people out of 68,766 speak English, which, considering their various intimate relations with us, and the circumscribed limits of their own available native resources, cannot fail to prove highly detrimental to their individual interests and social condition. We willingly concede all respect due to their reverence for time-cemented manners and hallowed customs, the jealous retention of their ancient and copious language—nay, to even a religious preservation of that brotherhood which characterised their ancestors several centuries ago; but, at the same time, we would seriously snbmit, that an *universal diffusion* of the English language amongst them, and a good sound education, are indispensible auxiliaries—acquirements, which would not only both mentally and morally elevate the poorer Cambrian, but indubitably secure the rapid advancement and prosperity of the whole community. So deeply rooted, however, are national prejudices, that an influential movement, which has recently taken place in furtherance of these most desirable objects, has not only been discouragingly received amongst the masses it is more immediately intended to benefit, but in many instances has encountered difficulties, where the hand of influential aid ought to have been eagerly extended to secure the proffered boon. The Commissioners, lately appointed to inquire into the state of education in the principality, have ascertained that, out of the 81 parishes in Carmarthenshire and Pembrokeshire, there were only 12 day schools of any description; while, out of 162 parishes in the counties of Brecon, Radnor, and Cardigan, there were only 90 schools, leaving 72 without any means of education. These few statistical facts sufficiently attest that the schoolmaster is *not* abroad. And, indeed, it appears, where the native instructor *is* found "teaching the young idea how to shoot," that, for the most part, he is lamentably deficient even in the common rudiments of his profession. To remedy such glaring defects, it is proposed to establish a Normal Training College, for the purpose of providing a competent class of schoolmasters. This is a commencement in the right direction—a remedial foundation pregnant with the happiest results; and yet, strange to tell, the pecuniary assistance proffered by Government, in this case, as well as for the establishment of the Normal schools throughout Wales (which as yet can boast of but two, respectively situated at Carmarthen and Swansea), is being met by an insensate opposition; the dissentients, it would appear, chiefly grounding their objections on a preference for the slow and uncertain *voluntary principle*.

There can, however, be but little doubt that, now the good cause is fairly set on foot, *prejudice*, in whatsoever form it may present itself in the outset, will, as the mists on the mountain brow are chased away by the morning sun, eventually give way before the praiseworthy efforts and genial good sense of liberal and enlightened minds, duly impressed with the light and life-giving principles which the general adoption of such measures must impart to the public weal. Morbid sentiments of nationality and exclusiveness, a blind adherence to obsolete usages and petty prejudices, ill become a civilised people in these days of general progression and marvellous advancement; and whether snugly ensconced in the retired recesses of mountain regions, or insulated by rolling seas, the subtle spirit of enlightenment and of enterprise, which is now almost everywhere abroad, will assuredly illumine their benighted paths with its bright coruscations, and eventually incite them to join the ranks of knowledge, and participate in the fraternization of nations. Remote is the day since the Saxons drove the Celts to take refuge in this mountainous side-slip of Britain, and determined was the internal policy which the latter subsequently adopted to maintain an independent position. For a long period prior to the reign of Edward I. they were governed by independent kings; and when their last prince, Llewellin, was vanquished and slain, in 1283 (at which time the country was united to England), the natives submitted to the English dominion with extreme reluctance; and Edward, as a conciliatory measure, promised to give them for their prince a Welshman by birth, and one who could speak no other language. Notwithstanding that they have ever since maintained the character of loyal and peaceful subjects, much of the leaven which stirred the spirit of the ancient Cymry inherently remains in their descendants, and, though in a modified degree, is sufficiently manifested in the petty jealousies and distinctions of the present day. The Anglo-Saxon, however, now invites his Cambrian neighbour to a full and unqualified participation in all the blessings of their common country, and ere long, doubtless, a mutual feeling of liberality and good-fellowship will render smooth and pleasant their paths of general intercourse, and open the door of freedom to all "the sweet little courtesies of life."

There is one other trait in Welsh nationality we may for a moment advert to. A stranger traversing the length and breadth of the land, and pondering over the names so universally borne by its inhabitants, is very naturally led to the conclusion that some 10 or 12 tribes, or families, constitute the whole community. He everywhere finds the domiciled Jones's, Evans's, Morgans, Davis's, Hughes's, and Pughs; and, as though their possessors were not content with bearing the single patronimic of the family, he, in a multiplicity of instances, discovers individuals rejoicing in the double euphony of Evan Evans, David Davis, Hugh Hughes, and Pugh Pugh. One is thus really led to imagine that the Celtic repugnance to an intimate intercommunity with their Saxon compatriots is even demonstrated in a rigid and religious adherence to a very limited circle of national cognominals. We cannot, however, help thinking that a respectable sprinkling of the Smiths, Johnsons, and Thompsons, would not only prove an agreeable intermixture, pregnant with much substantial good, but that the mental energies and physical development of the mountain Cymry would soon become manifest in wholesome advance and desirable improvement. An amalgamation of races has, in western Europe at least, been invariably found beneficial. The present progressive character of the British people is commonly attributed to the circumstance of their being so much mixed. The mixed English and Irish are amongst the cleverest and handsomest people in the world.

While we fully appreciate the feeling that attaches man to his native localities, and would even do all honour to his preservation and observance of certain antiquated customs, &c., we cannot but cordially welcome the doctrine which liberal and enlightened minds are beginning to proclaim to the world—that the only *nationality* worthy the jealous care of mankind, is that which has a moral and intellectual basis, priding itself in its energy, bravery, penetration, and generosity. Such, indeed, was the characteristic nationality of the Spartans of old—a little community which, amid the wreck and ruin of a system of states, occurring under the Macedonian rule, maintained a long and lofty superiority. "When I observed," says Xenophon, "that this nation, though not the most populous, was the most powerful state of Greece, I was seized with wonder, and an earnest desire to know by what art it attained its pre-eminence; but when I came to the knowledge of its institutions my wonder ceased; as one man excels another, and as he who is at pains to cultivate his mind must surpass the person who neglects it, so the Spartans should excel every nation, being the only state in which virtue is studied as the object of government." On a steady, unprejudiced view of the present domestic condition of Wales, it is almost impossible not to arrive at the conclusion, that the march of social progress has not only been a slow one, but that, as a people, the Welsh are scarcely emerged from that state of mental obscurity, which for centuries has brooded over the remotest of their native solitudes—a remark which, of course, applies exclusively to the masses, or lower grades, who, for the most part, possessing a knowledge only of the mother tongue, are necessarily confined to the limited sphere and available resources of their native hills and valleys, amongst which, however, while they can peacefully luxuriate on *stirabout* and mountain mutton, they appear perfectly content to nestle in blissful ignorance of the world without, unstimulated by even a passing wish to participate in the energies, acquirements, and wealth, so pre-eminently distinguishing the refined and accomplished nation with which they are geographically placed in such immediate juxtaposition. The working man, the mechanic, and, in a vast majority of instances, the industrious cultivator of the soil, are thus as manifestly excluded from availing themselves of a free intercourse with their English neighbours, and from benefitting by the rich streams of literary and useful information daily issuing from the British press, as though they were a community of Nereides inhabiting the depths of the adjacent seas—a fact the more to be deplored, as, we are credibly informed, there are scarcely any cheap periodicals, or works of practical utility, published in the Welsh language.

We have enlarged with some degree of freedom on this subject, from a consideration of the vital importance which the present mooted question of education in Wales, in which the teaching of the English language is wisely made to form a prominent feature, is to the present and prospective well being and prosperity of the country. If happily carried out, as its philanthropic projectors and aiders desire, it need hardly be observed that it will eventually purge the principality of its retardative prejudices, break down the exclusive barriers of nationality, impart a higher and more liberal tone to society, gently restrain the immoral and vicious, and at no distant day cover the whole face of this picturesque land with those enlarged blessings and pleasing spectacles, which never fail to emanate from the general diffusion of a wholesome and refined intelligence.

[*To be continued in next week's Mining Journal.*]

ON PYROGEN.—No. XIV.

BY JOHN JOSEPH LAKE, ROYAL LABORATORY, GOSPORT.

The existence of the electric matter accounts for the mechanical effects produced by lightning—the dislodgement of stones in buildings for instance. The following remarkable exhibition of its great power, during a storm off the Cape of Good Hope, I quote from the MS. adventures of a relative:—"A flash of lightning came, terrible beyond all its precursors, and with it a peal of thunder burst over us, that seemed like the report of 20 cannon discharged at once. So violent, indeed, was the shock, that the ship shook, and the guns on deck rang in response to it, like the sound of an anvil the moment after its being struck with a sledge hammer. The fluid had struck the ship, and first fallen upon the foretop mast, which it had split from about the middle downwards, with the strong oak cap that connects the topmast with the lower masthead. It had then, instead of taking the foremast, seized on the maintop-mast staysail, which had been hurriedly trussed down to that mast in the beginning of the squall, and, descending by it, had torn it almost to yarn, and must have set it on fire had it not been drenched by the rain. It had then pierced through the upper deck, close by the larboard side of the foremast, splitting and tearing up the strong oak planks, which in large ships form the deck round the masts, and entered the lower deck close by the ship's cooking apparatus, and where the cook slept, where it burst open his chest, and 'shoved him' (as he said) out of his hammock. Several of the cook's ladles and skimmers were strangely bent and twisted; and a very strong thick copper vessel, which might hold about two gallons, was twisted from its square form into very much the shape of a cocked hat, with a hole drilled through one of the corners. The fluid at one part of its progress, tore down part of the double bulkhead, which separated the cabin at that part from the main deck."

The violent effects here produced are readily accounted for by the passage of matter of the nature of pyrogen—the splitting of the mast and oak cap, and rending of the main staysail, being instances of the operation of the principles illustrated in these papers; for the fluid, not finding sufficient surface to pass down on the outside of the mast, forced itself into the body of it, and by its elastic energy split the mast. The immense mechanical power of pyrogen is displayed in not only splitting the topmast, but in splitting the strong oak cap also. The same thing likewise occurred with the sail, the disruption being only rendered more complete through there being less resistance to overcome. Here, by the repulsive force of the particles of the fluid, the sail was reduced almost to the state of yarn. Had the sail been only wet on the surface, the pyrogen could only have moved by the surface, and being impeded in its escape, heat would have been developed, and the sail most probably ignited, just as gunpowder may be raised to the exploding temperature when placed on a wet brick under the influence of a current of pyrogen, both of which results are produced by the operation of the law that causes heat in a small wire placed in a galvanic circuit, the melting of wire conductors, the deflagration and dispersion of gold leaf, and other similar phenomena (Papers X, XII, *Mining Journal* June 23, July 14.)

The foremast appears to have afforded a sufficient means of transit for the fluid, as no violent effects appear until the pyrogen arrived at the deck, where it displayed its power in tearing up and splitting the strong oak planks. This, and the "shoving" of the cook out of his bed, and the bending of his ladles and other utensils, can only be accounted for by the influence of material agency. There is no abstract power in Nature that could have produced it.

If a weight be placed upon a flat piece of glass, and a quantity of pyrogen discharged between the weight and the glass, on removing the weight the glass will be found reduced to powder, provided the former has been heavy enough. This can be readily accounted for by the existence of pyrogen, but in no other way; for the electric matter, passing between the weight and the glass, forces the former suddenly up, and as suddenly letting it fall, inflicts a heavy blow upon the latter. The idea of a mere abstract power passing between the two substances and producing a momentary uplifting of the weight is an absurdity.

When a bar of iron rests in a vertical position on the ground, it exhibits magnetic properties. This seems to be readily accounted for by the principles I have endeavoured to explain in these papers; for the pyrogen at the surface of the earth, in its efforts to ascend into the higher regions of the atmosphere, would naturally follow the course opened to it by a good conductor, such as the iron bar, and electrical currents would be produced in it, to which may be attributed its magnetic properties. The cause of magnetism not being developed in a bar of copper, in a similar way, seems to be the same as prevents its being of any use as the keeper of a magnet, in which respect copper perfectly resembles *pure* iron. Electric currents are, no doubt, generated in copper, but their existence requires to be proved in a different way. It is probable that the molecular state of these metals is, in a great measure, if not altogether, the cause of the difference, but the subject requires further elucidation.

The circulation of the electric fluid in the above way has probably a most important effect on the vegetable world. "I now considered," says Mr. Thomas Pine (*Proceedings of the London Electrical Society*, 1841-2, p. 20), "the fitness of plants by their structure and properties for receiving electricity from contiguous and surrounding bodies. Their solid parts are non-conductors, their fluids are conductors, and by some mighty influence, apparently from the atmosphere, they mount and spread 'in fluid dance' through every part of the tree, manifesting themselves with peculiar vigour at the *acute* extremities; while the solid trunk shows no other proof of their influence than by its gradual enlargement, and the breaking away of its dried bark, to make room for the internal expansion. . . . If the atmosphere is, as from experiment it appears to be, an immense magazine stored with electricity; and if, as observation teaches, the whole vital creation put forth into this magazine myriads of points, it would seem that in the event of these points being conductors, their action as such upon the surrounding and all pervading electric matter, would be intimately connected with the process of vegetation. Such reflections induced me to present the pointed extremity of a blade of grass to the prime conductor of my machine, when I was surprised, as well as delighted, to observe that the degree of its conducting energy, the brilliancy and constancy of the stream of light it produced, far exceeded anything I had ever before observed. I found, too, that the vegetable point continued to be illuminated to a greater distance than I had ever before seen any point." The superior conducting power that vegetation is thus seen to possess renders plants and trees, like the vertical bar of iron, a ready means of transit for the fluid; and, as electric currents are thus constantly produced in them, all that is required of pyrogen in effecting the necessary chemical processes for the growth of the plant is readily accomplished.

Proceedings of Public Companies.

MEETINGS DURING THE ENSUING WEEK.

THIS DAY.....Great Northern Railway Company—London Tavern, at Eleven.
WEDNESDAY..Anglo-Mexican Mining Association—offices, at One.
Aberg wesson Silver-lead Mining Company—offices, at Twelve.
Chester and Holyhead Railway Company—Euston Station, at One.
THURSDAY ...Cameron's Coalbrook Steam Coal and Swansea and Loughor Railway—offices, at One.
Llynvi Iron Company—offices, at Twelve.
FRIDAY .....London and North-Western Railway Company—Euston Station, Twelve.
Buckinghamshire Railway Company—Euston Station, at Two.
Northampton and Banbury Railway Company—Euston Station, at Three.
SATURDAY ...London and South-Western Railway Company—Vauxhall Station, One.
Norfolk Estuary Company—Gray's Inn Coffee House, at Two.

[*The meetings of Mining Companies are inserted among the Mining Intelligence.*]

EASTERN ARCHIPELAGO COMPANY.

The first annual meeting of shareholders in this important company was held at the offices, Cornhill, on Friday, the 10th inst.

J. M'GREGOR, Esq., in the chair.

The CHAIRMAN having observed, that in consequence of the time of year the meeting was but thinly attended, the majority of the shareholders being out of town, the SECRETARY read the notice convening the meeting, and Mr. WISE (the managing director) read the following—

DIRECTORS' REPORT.

At so early a stage of the existence of this company, the shareholders will hardly expect this, the first report of the directors, to announce extensive operations as yet effected, involving considerable outlay, or promising immediate returns and dividends. At any time, and under any circumstances, the directors would have adopted the path of economy and prudence; but, during the successive and protracted convulsions which have now for a long time so violently disturbed all the political and mercantile affairs of nearly the whole civilised world, it was impossible for the directors to be too cautious in their management of the affairs of this company. A careful observance of this policy necessarily precludes any accounts of considerable proceedings of the company up to this time, and reduces the present task of the directors to scarcely more than a reference to their introductory measures, and a congratulation of the shareholders on this undertaking having escaped the dangers which have overwhelmed so many others, not guided by the same rules of caution and frugality.

The directors have given their first attention to the coal mines at Labuan—to the working of which they have considered it prudent to limit for the present the operations of the company. The directors deemed it important to avoid delay in having assured to this company definitively the 500 acres of coal district in Labuan, agreed to be granted by the Crown, taking actual possession thereof, and ascertaining the best mode of working the same. The directors, therefore, despatched to Labuan a superintendent to survey, take possession of, and report upon, the coal mines, and the best steps for their advantageous working, and also to superintend the works.

Mr. Motley, who produced the highest testimonials, was selected for this important mission; and all requisite maps, papers, and instructions, were intrusted to Mr. Motley, previously to his embarking by the February mail. Mr. Motley's preliminary report, dated 24th May last, has recently arrived; but there had not been time sufficient to enable him to make a full report, which may be shortly expected. He was actively engaged in the fulfilment of his instuctions; but until the arrival of the stores, now on the way to Labuan, he could not efficiently commence the coal workings. He had been in communication with the Government authorities, and had taken the necessary steps in regard to the selection of the coal district.

Mr. Motley's report of the value of the coal is highly satisfactory. He says—"The quality of the coal, proper attention being paid to working and selecting it, is beyond all praise; I certainly never saw any to equal it for steam purposes."

The directors have furnished Mr. Motley with sufficient means to enable him to commence working the mines, and the Eastern Archipelago Company's agents at Singapore, Messrs. Shaw, Whitehead, and Co., have been instructed to co-operate with Mr. Motley, in supplying the requisites incident to such a commencement. All accounts confirm the favourable opinion already published of the Labuan coal; and the fact that, in April last, Labuan coal sold in the market at Singapore at 8*l* per ton, seems conclusive on this head. The China mail steamers will, in all probability very soon be required to call at Labuan; and from its advantageous position, so sooner will the works of the company be known to be in full and regular operation, than a considerable demand for Labuan coal must follow with certainty and regularity.

The balance-sheet, made up to 30th of June, shows the monetary affairs of the company, and from it the shareholders will see that the expenses have been on the most rigid scale of economy. Hitherto no call, beyond the deposit of 5*l*. per share, has been made; but a further call of 5*l*. per share will be made in October next.

By the constitution of this corporation, all the present directors, excepting the managing director, Mr. Wise, vacate their functions at this present ordinary general meeting of shareholders. They are all eligible for re-election, and offer themselves accordingly. In addition to the present number, Sir John N. R. Campbell, K.C.H., Lieut.-Colonel the Hon. G. T. Keppel, M.P., and Colonel Rawdon, M.P., have severally offered themselves as candidates for the office of directors. The Charter, Deed of Settlement, correspondence, accounts, and balance-sheet of the company are open for the inspection of the shareholders daily, during business hours, at the offices of the company, 34, Cornhill.

The directors going out of office were then re-elected, and the above-named gentlemen, as additional directors, were unanimously elected.

The CHAIRMAN then moved, that the directors be empowered to borrow 5000*l*. on the company's bond. They could not tell what capital they might require, as they intended to make but one call during the year, and the next meeting would not take place until that day twelve months, they wished to be in a position to meet any circumstances which might turn up.—This resolution was also carried.

In reply to some questions, the CHAIRMAN said that, although he certainly had not official authority for it, he could safely state that it was the determination of Government, that the ships of the Peninsular and Oriental Steam Navigation Company should call at Labuan for the company's coal, *en route* for India and China, and that the important station at Singapore should be effectively kept up. He said that, looking on the settlements of Great Britain in India and China, and our commerce in those extensive seas, Labuan was most centrally situate, and highly adapted for a coaling and watering station.

Mr. WISE further stated, that the Government had reserved to themselves the right to compel the Peninsular Company's vessels to stop at Labuan, and, when the proposed arrangements are carried out, an enormous saving will be effected, because the freight from Labuan to Singapore and Hong Kong will be saved. They were anxious to be in a position, therefore, if the Government should say, "Are you ready to supply our steamers with coal?" to answer in the affirmative. The present coal obtained at Labuan is only surface coal, and it is necessary, before any great supply can be got at, to have the veins skilfully and properly opened up. This surface coal has already been sold to her Majesty's navy at the rate of 1*l*. per ton, by a person at Labuan, who is now, however, dispossessed and prevented obtaining a further supply, that right having been ceded to this company.

The financial statement was then read, from which it appeared that the preliminary expenses of the company were 460*l*. 6s. 8d.; the office expenses and salaries, 869*l*. 1s. 10d.; and the expense of the establishment at Labuan, 379*l*. 10s. 6d. A small balance remained in hand.

A vote of thanks was passed unanimously to the chairman and directors, and the meeting broke up.

It has been rumoured that the case of Dimes *v.* the Grand Junction Canal Company will be amicably arranged. This long-pending suit has run over a period of more than 12 years, and the whole of the decisions of the Lord Chancellor, it is stated, will have to be reversed, owing to his lordship being a shareholder in the company, and, therefore, one of the *defendants* in the suit. The effect of this will be, that all the costs will be thrown upon the Canal Company, and both parties will have to begin again. These proceedings arise from Dimes being lord of the manor of the property through which the canal passes, in Hertfordshire, and certain rights having been infringed by the company.

SHIP CANAL BETWEEN THE ST. LAWRENCE AND LAKE CHAMPLAIN.—The project of a ship canal to connect the St. Lawrence River with Lake Champlain, which has been long in agitation, has at length received so much of form and substance that the Parliament of Canada have granted an act of incorporation for such a work. The charter, as we learn from the *Saratoga Republican*, is of the most liberal character, leaving the whole contract and the selection of the route, and of the work itself, to the stockholders, whether residents of the province or of the state. The Saratoga paper adds:—"One route, commencing at Caughnawaga, at the head of the Lachine Rapids, nine miles above Montreal (to which point there is a ship canal from Montreal), and terminating at St. John's, was surveyed two years since by order of the Government. The distance is but 19 miles, over a very flat country, and shows only a fall of 16 feet between Lake Champlain and the St. Lawrence. The entire route is so feasible, and the advantages are so great, that the only wonder is that the work has not been completed years ago. That it will be finished now at an early day there can be no doubt; and that it is designed to produce one of the greatest revolutions of modern times in trade is equally certain. When completed, steamers from all the western lakes can reach Whitehall without breaking bulk. The time employed in the transmission of produce and goods by the great West to New York will be lessened from eight to ten days, and in many cases more; the expenses will be materially reduced; the navigation will commence much earlier than on our State canals; Whitehall will ultimately possess the importance of Buffalo; and the great North, with its tide of travel and business, will become as proverbial as the great West is at the present time." The effect of such a canal as this cannot be overrated nor measured as yet. One of its tendencies will be to make New York the seaport of Montreal and of Canada west, instead of Quebec. Another will be to bring the far Western produce and travel without breaking bulk to Whitehall, whence a continuous railroad now is, or soon will be, in operation to the city of New York—besides the Northern Canal for the transportation of heavy produce. Such a canal is the fitting complement of the Welland Canal, which for commercial purposes annihilates the Falls of Niagara, as this will the strip of land which divides the waters of the St. Lawrence from those of the Hudson. New York city has as deep an interest, as it seems to us, in the construction of such a canal as Montreal itself; and if, in the progress of events, the Canadas shall become hereafter part and parcel of these United States, this canal will be a link ready formed to bind the new to the old states, and make us one in interest as in feeling.—*New York Paper.*

VAN DIEMEN'S LAND COMPANY.

This company are now in a position to grant freehold estates of their lands to emigrants on favourable terms, their whole 400,000 acres having recently been secured to them by Act of Parliament; of these 20,000 acres are situated at Circular Head, 50,000 at Emu Bay, 10,000 at Hampshire Hills, 150,000 at Surrey Hills, 100,000 at Woolnorth, 10,000 at Middlesex Plains, 24,000 at Robin's Island, 1720 at Walker's Island, and 255 at Trefoil Island. The company particularly at present recommend Circular Head and Emu Bay for agricultural emigrants, as possessing a fine soil, capable of growing all the grain, vegetables, and other produce known in England, in the highest perfection; a healthy climate, frost and snow being unknown, and the farmer thus being enabled to pursue his avocations constantly, and without interruption. Upwards of 7000 acres of heavily timbered forest on the coast have been surveyed, marked out, and divided into 80 acre sections, 2300 acres of which are let to tenants, who have 700 under cultivation. One-half the purchase-money may remain at interest of 5 per cent., and the company are prepared to render every assistance, whereby the comfort of the emigrant is secured, both during his passage, and on his arrival out, and every facility given for immediately placing them in undisturbed possession of their allotments. In a treatise published several years ago by the Count Strezelecki, totally unacquainted with, and uninfluenced by, the company, he particularly dwells upon the splendid character of the climate and soil of Van Diemen's Land. He states that the farms are in a most advanced state, the rotation crops and mode of working being truly admirable, and present a truly English aspect. The soil is of a reddish-brown colour, fine grained, of moderate cohesion, and friable, unctuous to the touch, porous, and easily dries up, it does not crack during dry weather, nor clog when wet. The principal crop is wheat, of 40 bushels per acre, the rotation being two crops of turnips and one of fine wheat.

EMIGRATION TO NATAL.—On Tuesday, the *Dreadnought* sailed from Gravesend with 120 cabin, intermediate and steerage passengers for Port Natal, being the third vessel dispatched this season for that rising colony, by Mr. J. C. Byrne, since he obtained those concessions from the Emigration Commissioners that have enabled him to confer land in the ratio of passage money, a steerage passenger acquiring 20 acres for 10*l*., priority of choice being secured according to the date of entrance on each ships books. Originally Mr. Byrne was restricted by Government to the location of 500 settlers; but the manner in which he sent out his first two ships, the respectability, intelligence, and comparative affluence of the passengers, and their general eligibility for the colony, so favourably impressed the commissioners, that they have extended the concession so as to embrace 2000 adults; and there is little question that the same liberality on the part of the home executive will accompany the reception here of each successive report from the authorities in the colony, similar to those that have reached us since the publication of Governor Sir P. Maitland's communication to Lord Stanley in March, 1846. The *Dreadnought* is an entirely new vessel, never having been at sea before, and is expressly built and fitted up to ply between London and Natal. She more resembles a private yacht than an ordinary emigrant vessel; and space is so economised by the introduction of all the most modern improvements in the shape of patent ventilating, cooking, and other appointments, that the passengers enjoy a degree of accomodation attainable only in the largest and most expensive sailing packets. The classification is most complete. Each apartment has an infirmary, and all domestic requirements to itself, adapted to either sex; and hot and cold baths are available at the discretion of the doctor, whose surgery is on a scale seldom observable in a moderate sized vessel, though there is little apparent present necessity for such unusual precaution, as a more healthy set of emigrants, whether men, women or children, could not be seen. They are of a very superior class, in their respective stations, the humbliest being possessed of capital, in goods or money, that would be regarded as very considerable in a corresponding rank of American, or even Australian emigrants. They were in the best possible spirits on their departure at the prospect before them, animated by the expectancy of equalling in prosperity those that had preceded them, and stimulated by the assurance that large numbers of their countrymen are about to follow in regular and rapid succession; for already the next vessel on the station is, to a considerable extent, engaged for passage and freight, the latter chiefly consisting of agricultural implements, of which the *Dreadnought* on Tuesday took out a great deal, as well as mechanics' tools, and general merchandise. Previous to sailing, Mr. Byrne, according to the excellent custom he has adopted, entertained his passengers at Pallister's Falcon Hotel, Gravesend, and having given them a *resumé* of the latest information from Natal, including the actual condition of the emigrants whose proceedings had been reported upon, he addressed some admirable instructions and advice as to their conduct during their voyage and on their arrival, inculcating obedience to the captain and the surgeon, as the first essentials to their own safety and comfort, and enforcing the observance of morality and decency in words and deportment, both on their own account, and for the sake of the females and children, whom a contrary course of action would scandalise. He expressed much gratitude for the co-operation he had received from Government, whereby he was enabled to realise a far greater degree of prosperity for the settlers in Natal than could have possibly been hoped for in the time; but he also attributed most of it to the fact that those who had gone out, instead of giving way to the dissensions and jealousies observable elsewhere, had adopted the wise precedent of the German and Dutch emigrants, and mutually assisted and encouraged each other, and with the best results to the community and individuals. Within a year he purposed again visiting the colony himself, and on his return he felt persuaded that he should be armed with a superabundance of additional facts in support of what he had been so long asserting in his books, in public lectures, or by private correspondence, that Natal was the best colony for emigration in the British dominions.

ENGLISH-BUILT WAR-STEAMERS FOR THE AUSTRIAN GOVERNMENT.—It is stated that some time ago, the Austrian Government ordered the building of three large and powerful steam men-of-war at Bristol. The contract for the structure of these vessels was taken by Messrs. Patteson and Co., shipbuilders of that port, who immediately proceeded to the execution of their engagement. The greatest despatch was used in the construction of the first steamer, which was launched a few days ago; her equipment for sea is now progressing rapidly. The two other vessels, which are of large tonnage and power, are building in the yard of the contractors, near the Princes-street bridge.

The Northern Artesian well, near Southampton, has now been bored to 353 feet in depth. We learn that the progress has been impeded by a stone 22 inches thick, and the supply of water had decreased through decay of the rods.

LANCEFIELD FORGE.—This extensive and interesting workshop of industry has of late been visited by a more than ordinary number of strangers and others, anxious to witness the operations by which some of the largest malleable iron shafts for machinery are manufactured, and their curiosity has been amply gratified. Lancefield Forge, we may inform our readers (the property of Messrs. Fulton and Neilson), is situated in Lancefield-street, Anderston, near the foot of the North-quay, and is celebrated for the production of the hugest and finest pieces of forged iron work to be found in the three kingdoms. When in full operation there are about 100 persons employed on the premises, several steam-engines constantly at work, and the various processes for the conversion of common worthless-looking scraps into ponderous bars and shafts fitted to drive the paddles of the largest steamers, or the wheels of the most extensive manufactories, are carried on with steadiness and vigour. In one part of the work we are shown a cutting machine driven by steam, which slices iron plates, an inch in thickness, into small pieces, as easily as a housewife could cut a piece of cheese with a table knife. In another department, these scraps or shingles are built into heaps, about the size of quartern loaves, preparatory to being put into a furnace, from which they are drawn out in lumps or masses blazing red, and then subjected to the "tilt hammer," by which they are beaten into a solid state, and shaped into bars of a certain length and thickness. From this part of the work comes the material for the construction of all the immense shafts, columns, and heavy engine gearing which daily issues from the forge, sometimes requiring 10 or 12 horses to convey them to the place of their destination. After leaving the tilt hammer, these iron bars are conveyed to Nasmyth's patented hammers—two of the most interesting machines in the place—by which they are beaten into larger pieces, and made to assume the form and design for which they are required. These machines can be made to give a pressure of five to seven tons at a stroke, and are easily managed by two or three workmen, who can make the huge mass come down at one moment so softly as scarcely to bruise a blade of grass, and at another with a force that would sink a ship of war. Here, by the help of lever power, two or three men can raise, and turn, and manage the formation of a mass of iron weighing 12 or 14 tons as readily and as simply as a common blacksmith would forge a horse's shoe, and here these immense masses are formed so accurately as not to be the sixteenth part of an inch from their pattern. At present we may mention the Lancefield Forge Company are in course of constructing four shafts, each of them 14 tons weight, for the Halifax vessels, and the process of their formation is both ingenious and surprising. Another article in the work that attracts much attention is what is called the slotting machine, a huge iron structure, about 65 tons weight, by which blocks of cold iron are cut, and groved, and paired, as easily as pieces of wood in the hands of a carpenter. The work, upon the whole, is well worthy of a visit from the curious and reflecting, who, if privileged to a view of it, are certain of a kind reception from Mr. Sholto Douglas and Mr. Marshall, the intelligent superintendents. We may mention that the workmen have the use of hot, cold, and shower bathe within the premises, and that such is the general healthiness of the employment that there was not a single death amongst them during the last twelve months. They maintain a sick and funeral society, of which all are members, and for the last twelve months its support cost them only 1s. 1d. each.—*Glasgow Chronicle.*

Mining Correspondence.

[The Commissioners of Inland Revenue having notified to us their resolve to charge with advertisement duty all reports having the agents' names affixed, we appealed to them in a memorial, setting forth that we, or the respective companies, derived no advantage therefrom—the only object sought, or obtained, being that of affording to the mine adventurer and public the greatest guarantee we could for the truthful and *bonâ fide* nature of the statements periodically set forth, by authenticating them, and thus fixing a responsibility on the writer. The Commissioners have replied, that "the reports, with names attached, are advertisements, and that duty will be charged thereon." We have no alternative but submitting to their dictum. How far the Commissioners are correct in the view they take, our readers can judge as well as ourselves;—we can but hope that, on reflection, they will see the error into which they have fallen, and rescind the orders they have issued. All reports inserted under this head, however, may, as heretofore, be considered as furnished by the regular agents of the company; and we shall carefully guard against the publication of statements which cannot be relied on as correct.]

BRITISH MINES.

BARRISTOWN.—The pitches in the back and bottom of the adit level are producing about 8 cwts. of lead per fm., on an average; and our operations at present are nearly confined to this.

BEDFORD UNITED.—Our usual monthly survey took place on Friday, at which the following bargains and pitches were set:—Burley's winze has been sunk 2 fms. 2 ft. 6 in. during the past month, and is now down to the 103 fathom level; the men are placed to drive east and west on the course of the lode, 2 fms. stent, at 6*l*. per fm.; the lode is not so rich as it was, but, in all probability, it will improve as we drive towards the shoot of ore east, and under Crew's winze west. Crew's winze is discontinued for the present on account of water; in driving from Burley's winze we expect to drain it; the lode is about 2 ft. wide, with a leader of 9 in., which will yield 2 tons of rich work. The 103 fm. level has been driven 3 fms. 3 ft. 3 in.; the ground is easier for driving, but there is no alteration as regards the lode; the present price is 7*l*. 10s. per fm., stent 3 fms. The 90 fm. level has been extended 1 fm. 3 ft. 5 in.; no lode has been taken down during the month; the ground is harder; the price is 11*l*. 10s. per fm., stent 2 fms. The 70 fathom level has been driven 2 fms. 6 in.; the lode is more orey than it was, and now yields good saving work, and there is every probability of its continuing to improve. Reynolds's winze in the bottom of the 80 has been sunk 2 fms. 1 ft. 3 in.; this winze is going down to the 90 end, and we are anxious to hole it for ventilation; it is set to six men, 2 fms. stent, at 10*l*. per fm. The pitches have yielded a fair quantity of ore, and remain without any material alteration. We have sufficient ore broken for the next sampling, which will take place on the 27th inst.

BIRCH TOR.—Vitifer lode in Dunstan's shaft is producing good work. In the 10 fm. level, east of this shaft, the lode is producing saving work; in this level, west of said shaft, the granite is still hard. On Birch Tor lode, in the 10 fm. level, east of Prideaux's shaft, the back is improving; in the same level, west of this shaft, the stopes are improving. In the deep adit level, east of Hawk's shaft, the lode is continuing as good as it has been since we first cut this shoot of tin; this end is about 50 fms. to the east of the deep adit, and has been productive to the extent of the whole 50 fms. The ground in the cross-cut north is still favourable for driving. We are getting on well with the adit level.

BRYN-AR-IAN.—The lode in the 10 fm. level, east from the shaft, still continues large and orey, yielding 10 cwts. of ore per fathom. The stope back, over the adit level, is producing 1 ton of ore per fm.; the stope east from the winze 15 cwts. per fm.; and the stope back and bottom of the shallow adit level 8 cwts. of ore per fm. The lode in the north side of the winze, under the adit level, is much as last reported.

CWM ERFIN.—We have got the water in fork at the 20 fm. level, at the engine-shaft, and on Monday shall commence to drive our 20 fathom level east, and to stope the backs west to the end. The 20 fm. level, east of the engine-shaft, will produce about ½ ton of ore per fm.; the stope, 5 fms. west of ditto, 12 cwts. per fm.; the stope, 10 fms. west of ditto, ½ ton per fm. The sink, 15 fms. west of the whim-shaft, is worth, for the length (12 ft.), 12*l*. per fm.; the rise against ditto, from the 20 fm. level, west of the whim-shaft, is worth 12*l*. per fm. The 20 fm. level, east of the whim-shaft, is poor. The sink, 25 fms. east of the whim-shaft, for the length (12 ft.), is worth 15*l*. per fm.

DEVON AND COURTENAY.—The lode in the end driving west in the 40 fm. level is at present abont 2 ft. wide, composed of capels, white iron, prian, and some spots of ore; the ground is more favourable for driving, and I think will improve: the rise in the back of this level we have commenced driving west, on a lode 2 ft. wide, composed of gossan and mundic, and also producing some good stones of grey and black ore in various places in the lode; I shall save a pile of it for dressing. In the rise in the back of the 50 fm. level we have communicated with the winze sunk in the bottom of the 40: the men will now commense stoping orey ground in the bottom of the winze the remainder of the month, where they have ore ground producing full 1½ tons per fm.

DRAKE WALLS.—Brenton's engine-shaft is sunk 8 fms. below the 60 fm. level; the lode is 18 in. wide, and producing good stones of tin throughout; the 60 fm. level, east of said shaft, still continues tinny, and somewhat improved since last reported. In the winze sinking below the 40 fm level, west of Brenton's shaft, there are three small branches, producing good stones of tin; the stopes east of said shaft, below the 50 fm. level, are suspended for the present, as we have not a sufficient quantity of water for drawing. The stopes west of machine-shaft, below the 50 fm. level, are producing some good work for tin; the stopes east of said shaft are producing good work for tin, but not so good as last reported. In the 50 fm. level, east of said shaft, the lode is 3 feet wide, producing good work for tin, rather improved in the past week. In the stopes east of machine-shaft, below the 40 fm. level, we have tinny branches; the winze sinking below the 40 fm. level, east of said shaft, are producing good work; this winze, when communicated to the 50 fm. level, will lay open some good ground. The 33 fm. level, east of footway-shaft, is producing fair quality tinstuff; in the stopes below the 33 fathom level, east of said shaft, we have good branches of tin; the stopes east and west of said shaft, below the Tye level, are producing fair quality tinstuff; the Tye level, east of said shaft, is producing good branches of tin. Some men, lately employed to sink a wheel-pit for a paper manufactory, near the Tamar, on the eastern part of the mine, last week discovered some good stones of yellow copper ore, but we cannot trace anything like a lode in this place; but very near, within a few yards of the same place, we have discovered an old adit going into the hill, and we have put some men to clear the entrance of it, to let down the water. We have found two stones of ore amongst the rubbish, but hope to see more about it in a day or two, when I will write you again. We hope to sample, on Monday next, about the same quantity of tin as was sampled last month.

EAST CROWNDALE.—Having met to-day, and examine the mine carefully together, we beg to forward the following as our report:—The middle shaft is now holed, and the men are engaged in cutting down to make it complete to the 17 fm. level, which we expect to accomplish by the end of next week, and, when done, we shall at once commence sinking the shaft with all possible speed. We have four men stoping in the back of the 17, which we intend shortly to suspend, and in order to make returns to meet the cost, if possible, we propose to search the bottom of the 17, and stope for that purpose. We calculate that we have 4 tons of tin ready for stamping, which we intend doing next week; and hope to sample about the middle of September the whole of July and August ores. The quantity of next sampling will greatly depend on the quality of the ground we have to sink through. The materials wanted for August will be (say) 12 tons of coal, 6 loads of timber, powder, candles, &c., which will be deducted from the men. We shall be as careful as possible not to order any more materials than we want.

ESGAIR LLI.—The south lode in the deep adit, east of the engine-shaft, is much the same as last reported, and will yield, on an average, about 6 cwts. of ore per fathom. The north lode, in the deep adit east, is improved since my last report, with much water coming from the present end, and will yield, on an average, from 10 to 15 cwts. of ore per fm. The lode in the winze below the shallow adit, is much the same as last reported; but as yet we have not cut the foot-wall of the lode.

EXMOOR WHEAL ELIZA.—During the last week about 6 ft. have been driven in the 24 fm. level, towards the north lode; several branches have been passed through, which underlay just as the lode does, but we still hope to cut something more promising in the course of a few days. About 4 ft. have been driven north towards the caunter lode, but as yet not discovered the other side of the slide.

HEIGNSTON DOWN CONSOLS.—The ground in Bailey's shaft is much easier of progress than for some time past. The 35 fm. level, east of cross-cut, is improved in the present week, producing some good saving work for tin ore, with occasional stones of copper ore in places. The 35 fm. level, west of cross-cut, is suspended for the present. At Hitchens's shaft, no lode has been taken down in the present week.

HOLMBUSH.—The lode in the 120 fm. level south is 4 ft. wide, composed of quartz and stones of lead. The 120 fm. level, east of Hitchens's shaft, is, for the present, suspended. We have driven 6 fms. in the 120 fm. level cross-cut south the last month, and have set it at again at 5*l*. per fm.—month extent. The lode in the 110 fm. level south is 3½ ft. wide, producing 4 cwts. of lead per fm.; the lode in the stopes in the back of this level will produce about the same quantity of lead per fm. The lode in the 100 fm. level south is 2 ft. wide, composed of soft spar, prian, and stones of lead. The flap-jack lode in the 100 fm. level, east of the great cross-course, is 20 in. wide, composed of spar, mundic, killas, and stones of copper ore. The lead pitches, on the whole, are rather improved, which you will perceive from the tributers on the setting list.

KIRKCUDBRIGHTSHIRE.—The lode in the 62 fm. level, east and west of Stewart's shaft, is about 6 ft. wide, with fine lumps of ore, in a tender spar and killas. The lode in the 50 end east is 2 ft. wide, with a good stone of ore in the end. The lode in the winze over is very much like the lode in the end. The lode in Keath's shaft is 2 ft. wide, still producing only spots of ore occasionally. The lode in the 50 end west is 3 ft. wide; it has a strong course of sulphur, copper, jack, &c., on the south side, which, though very kindly, has impaired its value a little; it yields now about 7 cwts. of lead to the fm. The lode in the 40 end west is 2 ft. wide—a small branch of ore on south wall.

LAMHEROOE WHEAL MARIA.—I send herewith answers to the queries forwarded by you in your letter to the purser of the 3d inst., and which I hope the committee and shareholders will find satisfactory. With regard to the future monthly cost, I have carefully and minutely gone into it, and I cannot see that it can be less than 200*l*. Since we cut the lode and the cross-course in the engine-shaft, the water has increased there to 8 strokes per minute; and the great quantities of sand which are continually being washed out of the cross-course, and taken up with the water into the buckets, compels us to change them twice at least a week; and our pitwork being small, more than a core is lost every time before the water can be forked out. This delay is also partially felt by Davey's shaftmen; and the great speed at which the engine must necessarily be driven, causes not only great rack, &c., to the pitwork there, but also a great consumption of fuel. It is, however, unavoidable; but I hope, when we get below the cross-course, the injury to the buckets, and the delay thereto created, arising from the gravel, will cease.

LLWYNMALEES.—Our 14 fm. level has further improved; we have a large fine orey lode in the end, and also on both sides the level. The London shaft is much the same as last reported; in consequence of the lode in this shaft underlaying more than at the 14 fm. level, we were obliged to stope down the north side of the shaft, so as to bring the pumps to work properly; we shall complete this in a week after we commence working. Our wheel is working full speed, and on Saturday the mine will be in fork, and we can resume working the 14 fathom level and London shaft on Monday; we have 6 ft. of water in the pond, which is likely to increase; in the western winze we have a very fine lode; this winze is now 8 fms. under the surface. We are in full work on the dressing-floors, particularly with the slimes from the slime pits, and the waste slimes from the upper slime trunks, all of which are now worked by a small water-wheel, which will effect a great saving in labour, and add considerably to our returns. We have now 9 tons of ore ready for market, and shall, I have no doubt, have 25 tons by the end of September. The mine, I am glad to say, never looked better; but, on account of the long drought, we have not been able to get on as fast as I could wish, but as the water keeps increasing in the pond, it is not likely we shall have any further hindrance for want of it.

MENDIP HILLS.—In removing the top rubbish from off the beds of slags at Blackmoor, I am pleased to inform you we find it not near so thick as our expectation led us to suppose; at certain points the slags (which is of excellent quality) extends nearly to the surface. We continue to progress favourably with our different erections in this part; the engine (with the exception of the steam-pipe, which we expect shortly) is completed, the stands for carrying the chains from the engine to the incline plane are also fixed in their places, and the carpenters are at present engaged in making and fixing the pipes for conveying the water to the different parts of the dressing floors. In Charterhouse Valley I have no particular change to report, the beds of stuff continue to yield some good quality slags. We have, during the past week, smelted our pile of slags, which produced between 2 and 3 tons of lead; the reverberatory furnace is now thoroughly dry, and the two men engaged for working it will be here to-day; we, therefore, hope to commence smelting shortly.

NANT-Y-CRIA.—The new lode in the shallow adit west is much the same as last reported.

SOUTH WALES MINES.—At Bodcoll, there is not any alteration in the north lode, in the deep adit east since my last report. The lode in the Dolwin deep adit, east of the Rhydnet River, is 6 ft. wide, composed of slate, good gossan, quartz, mundic, copper, and lead.

SOUTH WHEAL JOSIAH.—Since my last report we have driven about 4 fms. in the adit end west, on the Wheal Jack Thomas lode; the appearances are much improved, and the lode is now about 3 ft. wide, producing slabs, or rocks, of mundic, intermixed with grey and yellow ore; this very favourable indication of being near a course of ore, has induced us to put on two more hands in the adit, which make a full pare, to drive on with all speed into the hill, where we have three large cross-courses before us, and where we expect to cut a course of ore.

TRELEIGH CONSOLS.—At Garden's shaft, below the 11*fm.*, sinking in the country, we have discovered another branch of ore this week, dipping towards the lode. In the 90, west of ditto, the lode is 1 ft. wide, with stones of ore. In the 80, west of ditto, the lode is 18 in. wide, worth 8*l.* per fm.; in the 80, east of cross-cut, no lode taken down this week; this end is coming under ore ground. In the winze below the 80, the lode is 15 in. wide, with stones of ore. In the 60, west of Garden's, the lode is 2½ ft. wide, with stones of ore, and is looking more kindly. At Wheal Parent, the engine shaft below the 30 is sinking in the country, south of the lode. In the 30, east of ditto, the lode is 2 ft. wide, worth 15*l.* per fm. In the 30, west of ditto, the lode is disordered by a cross-branch. In the 20, west of ditto, the lode is 1 ft. wide, not much ore. At the whim shaft below the 12, the lode is 18 in. wide, with stones of ore. At Nicholson's shaft, on the middle lode, no ground sunk below adit, not having completed timbering the shaft, which will require another week.

WEST WHEAL JEWEL.—In the 57 fm. level, west of Williams's cross-course, on Wheal Jewel lode, the lode is looking more promising for ore—drove last month 4 ft. The 47 fm. level, west of ditto, on ditto, the lode is unproductive—drove last month 1 fm. 4 ft. 6 in.—these men are put to drive the same level east. The deep adit, west of ditto, on ditto, is unproductive—drove last month 2 fms. 0 ft. 6 in. The measurement of the rise in the back of the 70 west, on Wheal Jewel lode, will be sent next week. In the deep adit, west of Tregoning's shaft, on Tolcarne tin lode, the lode is producing stones of tin—drove last month 1 fm. 1 ft. Tregoning's shaft, sinking below the deep adit west, sunk last month 2 fms. 3 ft. 6 in. The 57 cross-cut, north from Buckingham's lode—drove last month 5 fms. 2 ft. 6 in. The stopes in the back of the 12 fm. level, west of Pryor's winze, on Tolcarne tin lode, are worth 11*l.* per fm.; the stopes in the back of the same level, east of Pryor's winze, on same lode, are worth 10*l.* per fm.; the stopes in the bottom of the 12 fm. level, east of Tregoning's shaft, on same lode, are worth 14*l.* per fm.; the stopes in the bottom of this level, east of Tregoning's winze, are worth 18*l.* per fm.—these stopes are working on tribute. The winze sinking in the bottom of the 57 fm. level, west of William's cross-course, on Wheal Jewel lode, sunk last month 1 fm. 2 ft.

WHEAL OAK.—The engine-shaft is now down about 9 fathoms under the 34 fm. level, on course of the lode, ground easier than last reported, lode 2½ ft. big, tin and copper, the latter predominates—set to six men, at 16*l.* per fm. In the 34 fm. level, east of shaft, lode about 2 ft. big, with rich black ore, produce per assay 9½, regularly improving as we approach the granite—set to six men, at 2*l.* 15s. per fm. In the deep adit south the ground has improved, veins of mundic in the end, and water very quick, indicative of being very near the lode—set to four men and two boys, at 3*l.* 10s. per fm. The winze in the bottom of the 34 fm. level east, lode 18 in. big—set to six men, at 4*l.* per fm. The pitch in the bottom of the 25 fm. level east is set to four men, at 10s. in 1*l.*; ditto to two men, at 13s. 4d. in 1*l.*; ditto in the 25 fm. level west, to two men, at 13s. 4d. in 1*l.* No alteration in winze or pitches.

WHEAL TRESCOLL.—Since our last report we have cut a lode in the north cross-cut 3 ft. big, and good for tin; in addition to this, all the other lodes fully bear out their former character, with a manifest improvement. The engine-shaft has been sunk 3 fms. below the adit, with fair ground, and we hope to get the lift in the cistern early next week, when, of course, the sinking will be performed more easily. Taking the superior price for our tin into consideration, we have great hopes of being able to pay cost this month.

WHEAL VINCENT.—In driving, to cross-cut the lode, from the engine-shaft, at the 10 fm. level, the ground is favourable. In stoping on the south lode, we are still breaking good work, especially as we go down. The lode in the deep adit is somewhat larger than when last reported on, and more water proceeding from it. In stoping on the north lode, we are still breaking moderate stamps work—rather improved since last reported on.

FOREIGN MINES.

ALTEN MINES.—The following is the report, from the 3d to the 24th July:

Raipas.—Since my last report there has been little, if any, alteration to note, and the appearance of the several workings continue favourable. Monk's shaft cannot be resumed on account of the water, but this impediment, we expect, will be of short duration; all the other places are at work, and yield the usual returns. The tributers are also tolerably successful, and we expect ultimately to derive great advantage from the introduction of this system. We have commenced driving down the ore, and hope shortly to be able to make some good deliveries to the smelting-house: the general prospects are still satisfactory, and we have every reason to anticipate that an improvement will be found in the quality of the produce.

United Mines.—The several workings have not deteriorated, although the lode in the new sink continues rather less productive than we had expected. The improvement at Woodfall's still holds good, and some of the tributers make remunerative returns from the attle heaps.

Old Mine.—The tributers returns are satisfactory, and the prospects continue favourable. We have commenced driving the old adit level towards the new workings in the middle sink, the ground is favourable, and the men are making good progress. Tribute operations have also been resumed on the surface, east of Bergmester's sink; we are following the lode on the side of the mountain, where it is 1½ fms. bread, and composed of a promising gossan, holding out most flattering indications. The sink under the adit level is still productive, and the tribute returns are equally satisfactory.

Ryper's.—The lode is still confined, but promising, and yields small remunerative returns.

Mancur's is still poor, but no further deterioration has taken place.

Michell's.—Fair returns of good ore continue to be made by the tributers from Nellen's lode, but the quality of the produce obtained from the surface operations is not quite so good as formerly.

Carl Johan's.—This branch of the works is still productive and promising: the returns of ore, although small, are very good, and equally remunerative. We are now busily engaged in returning the last two months' produce to the smelting-house. With next post we hope to be able to hand you a good estimate, and have every reason to expect it will be fully confirmed by the delivery note, which will be handed you in due course.

COPIAPO MINES.—The following is the mine report for April:—

Copiapo, May 31—**Checo Copper Mine.**—It is not a little gratifying to me to be able to report an improvement in the general aspect of this mine. In the 40 fm. level, east of Harman's shaft, where, for many months past, we have had the most encouraging indications, and occasionally stones of ore, we have now a regular and well formed lode 2 ft. wide, about 1 ft. of which is ore of 30 per cent.; this is encouraging, as we have a great extent of new ground before us. In the 20 fathom level, east of same shaft, we have a beautiful vein 2½ ft. wide, 15 in. of which is of nearly, if not fully, 40 per cent.; should the lode in these levels continue good, as at present, we shall soon lay open a considerable length of productive ground for stopes; in a winze, sinking below the last-named level, we have a large lode, 4 ft. wide, producing some stones of very rich ore, sufficient to pay the expenses of breaking, and with every prospect of a speedy improvement. We have now communicated the winze from the 12 to the 20 fm. level near the new shaft, and have great hopes of the lode in the same level becoming productive shortly. The stopes between the 12 and 20 fm. levels are also producing some excellent ore, about 28 per cent., lode varying from 1 ft. to 18 in. wide, so that you will perceive our prospects here are rather flattering at present; but, I would here observe, that if you were to judge from the quantity of ore being produced now, and that of years past, the improvement that I speak of may not appear so clearly to you as it does to me. It consists more in the difference of quality than in quantity, although partly in both; we have many times had great difficulty in dressing the ore here to bring it up to 25 or 26 per cent., while at present the average produce is 34 to 35 per cent.; now, I think, after deducting land carriage, freight, export duty, &c., all of which are the same on rich as poor ore, you will find one ton of 35 per cent. to be worth more than two of 25 or even 26 per cent.—hence I look upon the produce as being double,

San Pedro Copper Mine.—We have nothing new in this mine; the 10 fm. level continues to give some good ore, but the lode is small, only 9 in. wide, and about the half of which is ore of shipping quality; in the stopes in the back of this level, as also in the back of the 5 fm. level, we have had a pretty good vein during the last month, and I am in great hopes it will continue to yield a fair quantity of ore for several fathoms more to the west of our present workings. We have not yet been able to increase our force here. Produce at Checo, for April, 35 tons; San Pedro, 21 tons: total, 56 tons.

Al Fin Hallada Silver Mine—We have not broken down the lode in any of the level or winzes since I addressed you last, but have a great many fathoms desued, and as far as the captains can judge from the appearance of the wall, and from the vein, they are expecting a very excellent produce. In opening the ground by the lode some good stones of ore have been found, that appear to be disseminated through the surrounding stratum, which we look upon as a very favourable sign of the lode being rich; but the captains have orders not to break out until the 8th proximo, when I hope to be present, and expect nearly all the shareholders there also, as all hands are looking for a grand "quiebra."

San Jose del Carmen Silver Mine.—In my last I informed you, that in the adit level, we had a large lode, 4 ft. wide, producing some ore of about 100 mcs. per carga: but that we were daily expecting a rich bunch of ore. We have been expecting, and last night a gentleman called here and informed me that he had a few minutes since received a letter from a friend of his now in Tres Puntas, who stated that a very rich bunch of silver had on that day been cut in San Jose del Carmen, richer than at any former period. I hope to find this correct, but it requires confirmation from the captain, from whom I received communications dated the 25th, and who states that the level referred to above was much the same as when I saw it last, as furnished you in last report, and that the lode in the other levels and winzes had not been broken down. Thirty-eight tons of ore have been brought to the city from this mine in the last month, and are now being amalgamated; I cannot, therefore, report on the quality, but will inform you in my next.

Carmen Alto and Plomiza Silver Mines.—These two mines are now consolidated, and will be worked together as one sett, to avoid the expense of separate direction, and the keeping of separate accounts. The captain writes, that in the 10 fm. level north, on the middle or Carmen lode, the appearances are so pretty, that he is daily expecting a very rich bunch of ore; the vein is 3 ft. wide, composed of a beautiful quartz, as nearly allied in character to the Al Fin Hallada vein as possible; and that he believes it will soon produce plenty of silver; that the winze sinking below this level is producing some stones of ore—lode, 18 in. wide; and that he thinks it will greatly improve when broken down again. In the new shaft we are getting on well; about 3 fathoms have been sunk since the 10th instant.

Loreto Silver Mine.—I received a letter to-day, from the captain, stating that the lode is greatly improved in the shaft since I saw it, which was then small, but is now 3 ft. wide, and producing some good stones of ore; that in the other workings the lode had not been broken down.

Merceditas Silver Mine.—The lode in the different workings here will be broken down about the 10th of June, and I hope to have good news to communicate respecting this mine in my next.

Gloria Silver Mine—Not measured yet, and as we cannot have a good title to it until that has taken place, I have thought it prudent not to spend any money on such uncertainties, for reasons that I have given you before—that people holding adjoining setts are sure to try to take away a part of your ground, if any thing good be discovered previous to the measurement being made and full possession given.

Merceditas Gold Mine.—I received a stone or two of ore from this mine, with some beautiful spots of gold in them, and the captain informs me that he expects that the lode he has desued, and to be broken down on my arrival there about the 7th or 8th proximo, will yield about three tons of good ore.

Esperanza Gold Mine.—The lode here has been greatly disordered by a slide in two of the labores; but in the level over the slide, there is a good sized vein, and the ore of fair quality for returning, when carriage can be had at a moderate price.

Disculeridora.—The ore brought down from this mine and returned, has given about 32 ozs. of gold per cajon (3 tons); and the lodes in the different workings promise to turn out well in our next "quiebra," which will also take place about the 10th of June. By the next packet, I will furnish you with more particulars, when I have seen the mine myself; and I regret that I have been prevented from visiting these mines in the last month. I shall remit you all the silver and gold I can per next steamer; but it is impossible to give you an idea of the quantity of silver, as so much depends on our being able to procure carriage power, now that your own troop is fully employed carrying copper ore to load the *Sion*.

THE ANGLO-MEXICAN MINING ASSOCIATION.

Sir,—Some months ago you copied from the City Article of the *Times*, of the 18th March last, a letter of mine having reference to certain of the old Spanish American Companies. At the head of the black list stood the Anglo-Mexican Mining Association, and as there is a special meeting of its proprietors advertised for Wednesday, the 15th inst., "for the purpose of confirming the resolutions of a previous special meeting, which had appointed a committee of *six* directors and *six* proprietors to superintend the winding up the affairs of the association," I trust you will be kind enough to admit some brief observations I have to make upon these appointments, and upon past directoral management; and I claim some right to do this, since a very near relative of mine is, unfortunately for himself, the largest registered proprietor of Anglo-Mexican shares. In the first place, then, the appointment of an *equal* number of directors and shareholders, one of the latter (George Rougemont, Esq.) an *ex*-auditor of the association, does not meet the requirements of the present state of affairs. Such a committee is not very likely to act as "a committee of investigation," and, under present circumstances, an investigation should precede "*that division of the remaining assets in strict conformity with the* 60*th section of the Deed of Settlement*," which the managing directors are now so anxious about (*vide* circular of the 12th July).

Let us revert, however, to the plain evidence of facts, so superior to mere directoral declarations; and facts tell us—

1. That a capital of 1,200,000*l.* has been expended in about 25 years, less the few assets in hand, and the arrears of calls on 285 shares.

2. That during the above-named period *not* one dividend has been given to the shareholders.

3. That the two best mines worked by the association in Guanaxuato, the "Mellado" and "La Luz" (St. Barnabe), were given up to the native proprietors, and that these mines subsequently repaid to the company the whole of its outlay on them, and, it is understood, have in addition yielded large profits.

We further find, by a reference to the annual reports, that in the year 1838, John Schneider, Esq., chairman of the Mexican and South American Company, and the other directors of that company, who were also directors of the Anglo-Mexican, brought out a company called the Zacatecas Mining Company, and persuaded the shareholders of the Anglo-Mexican to agree to take an interest to the extent of 4000 shares; and to induce this, certain reports, seemingly of the Dousterswivel class, and made by some German agents, were brought forward respecting the extraordinary richness of the Plateros Mines—in fact, one of these reports actually states (*vide* Anglo-Mexican Report, A.D. 1838, p. 38), "That the ores then extracting were so valuable, that the agent was obliged to suspend extraction, and build a wall round the mouth of the mine, to prevent robbery;" yet the whole affair turned out a *dead failure* in 1842, leaving the Anglo-Mexican Mining Association several thousand pounds minus by its adventure. I have now referred to a few of the leading points for investigation; and I may add that, in the year 1834, certain charges of mismanagement against a commissioner then in Mexico were formally brought before the London board, and that the commissioner resigned; yet we find him again acting for the company in Guanaxuato in 1844 and 1845, without improving either its prospects or its property during his second *regimé*.

In fairness, it ought to be here stated that the acting directors have given their time and trouble to the association without remuneration; yet as they have already, at the annual meetings, made the most of this point in their favour, the shareholders have probably, ere this, derived every consolation possible, from the fact that they have been ruined* *free gratis*; and if all this loss and ruin has been occasioned by unavoidable misfortune, no persons are more interested in proving this than the managing directors.

To say the least, there has been a curious concatenation in the march of unlucky events. Worthless or worked out mines seem invariably to have been selected for experiment. Valenciana, Sirena, Tepeyac, Cedro, Pellegrina, and Asuncion have all by turns been tried in the balance of a profuse expenditure, without yielding any sufficient counterweight in the opposite scale of receipts; and nought now remains of the associations funds except a frittered remnant (*pars minima sui*), which on division is not likely to give a dividend of more than *threepence* in the 1*l.* on aggregate of capital and interest.

Charles-street, St. James's, August 6. Christopher Richardson.

ST. JOHN DEL REY MINING COMPANY.

Sir,—In the letters addressed to you on the affairs of this company, I have referred principally to details, which, although of interest to the shareholders, may in some degree divert attention from the foreign management as a whole, its consequences, and probable results. At the commencement of the present administration, the mines were in good stoping order, and capable of supplying more stamps than those at work. In putting up new stamps, the first consideration was their power; this depended upon the probability of obtaining and keeping black force, which could not, if properly selected, be found without much delay. This, in itself a strong reason for not putting up very powerful stamps, is strengthened by the greatly heightened cost, in time and money, of large wheels and machinery, in a country where labour is limited, and where, by increasing the size of timber and ironwork required, the difficulty and expense of obtaining them increases in a compound ratio. A 20-head stamps might have been put up in three or four months, near an old 12-heads, the latter to be knocked down when the new stamps were finished. The 20 heads would have done double the duty of the 12, giving a positive increase of 20 heads on the average rate of all the mills,

During their erection some blacks might have been hired; when at work they would have added 1000 tons to the ore previously crushed, and that without materially adding to the fixed expenses of the company. If at any time after their completion black force became more plentiful, and the mine supply beat the stamp heads, another set of small stamps could have been put up. Under this system the produce would not have reached $22,000 in any month, perhaps $18,000 to $19,000; but, on the other hand, the costs would have been a much safer document than some you have lately published. What was the course adopted? A 36 head stamps, worked by a 52 feet wheel, was determined upon to be the finest stamps in Brazil; blacks were hired from anybody who brought them, in ones or twos, for six years certain, whether they lived or died. They were sent to the mine; the supply of stone increased of course; plenty of hands to pick it, rejecting the inferior, and every nerve was strained to keep up the produce, until the new stamps went to work.

In about a year this was effected, the costs in the meantime regularly advancing. By drawing upon the refuse heap, all the heads are kept at work; but at length the heap is almost exhausted. With the cold season mortality increases; the men on the stopes are thinned, and they cannot be reinforced. The produce will fall lower and lower; the profits will follow them in their fall, for the costs are fixed; and, before long, it will be seen that, however vigorous the direction at Morro Velho, it has shown neither prudence nor foresight: it has looked to glorious results, without condescending to weigh the means at its disposal, and will add another to the long list of good concerns ruined by bad management.—Verax: *City, August* 9.

KINGSETT AND BEDFORD MINE.

Sir,—Being fully convinced of the value of this adventure, and that with proper management it would not only pay its costs, but dividends, I felt much surprise and regret, on attending a meeting of the shareholders at the mine, in the parish of Mary Tavy, on Monday last, at considerable inconvenience, to find that dinner and grog appeared to be the exciting elements in a far greater degree than the business of the mine. To my utter astonishment, neither accounts or report were read, although both agents were present. The only information we got was the pointing out to us about 30 tons at surface, which, of course, all could see plainly enough; and I am in a position to assert that, with a small present outlay, ore might be raised in sufficient quantities immediately to pay cost. That more vigilance is required on the part of the management, these facts will prove; and I certainly did think that the Exeter shareholders and the committee were better men of business. I beg the favour of your inserting this, as it may probably call forth such an explanation as will prove satisfactory, as I believe it is not very common to attend a general meeting without a report and the accounts being presented.

Exeter, August 8. A Shareholder.

* Amid the general wreck, it is pleasant to believe that the houses of agency in Mexico, and elsewhere, which have cashed bills, supplied quicksilver, stores, &c., to the company, have made a pretty good thing of it.

WHEAL OAK—WHEAL ENYS.

Sir,—In reply to a letter from Mr. Henry Rowe, of Exeter, inserted in your Journal of the 28th July, who calls himself an adventurer in Wheal Oak and Wheal Enys Mines, I beg to say, if so, he has addressed you under an assumed name, there being no person so called connected with either mine in that neighbourhood. Nevertheless, I do not regret his having written to you, because it affords me an opportunity of informing parties who have recently purchased shares, that I receive weekly reports from both mines, which are at all times open for the inspection of adventurers; and, under such circumstances, it has not been considered necessary to publish the same, particularly as, until very recently, nearly all the shares were in the hands of parties in the immediate neighbourhood of this town. There can, however, be no objection to comply with his request, and I will in future send you reports monthly, commencing from this week. Wheal Enys is situated in the parish of Wendron, which is considered one of the best tin districts in the county, and is surrounded by many mines, which are well known to have given large profits to the adventurers. The mine is held under lease from T. S. Enys, Esq., of Enys, for 21 years, more than 20 of which are unexpired, at 1-18th dues, and is very extensive, being nearly one mile from east to west and three-quarters of a mile from north to south. It contains several large leading lodes, with a great number of smaller veins. Within a transverse distance of 100 fathoms, eight large productive lodes have been worked on for many hundreds of fathoms, but at what period we have no record; suffice it to say, it must have been at a very early date, when the only mode of keeping the water was manual labour and horses. The present company commenced about two years since to clear up the old workings (which are at no point more than 8 fathoms under the adit, and from about 80 fathoms from surface), which consisted of an adit that had been driven east about 250 fathoms on the course of one lode. They have cleared and driven this 290 fathoms, at a considerable expense, it being of great importance and value for future operations. Many cross-cuts had been driven north and south of the same, and the lodes to which allusion has been already made, intersected and worked to a great extent on the backs, which the remains of the old workings, extending over the whole of the surface, fully prove, and which, from the arches of tin left standing, must have been very productive at and above these levels; and it is very certain the only cause of abandoning the mine was the impossibility of keeping the water, as is evident from several winzes having been sunk, varying from 6 to 8 fathoms under the adit. The present adventurers are continuing the adit in maiden ground on the course of the lode, which is now from 2 to 3 ft. wide, and are at this time raising more than sufficient tin from it of excellent quality (sold on the 17th July at 43*l.* per ton) to pay the labour costs of the mine. They are also driving south from the adit level 22 fathoms from surface, and are in daily expectation of intersecting a large lode, which had been worked only on the backs to a considerable extent in the western part of the mine, and should this prove productive, as they have every reason to expect, they may fairly calculate on being very soon enabled to erect an engine, without calling on the adventurers; and if the lodes continue as good below as they must have been in and above the adit level, they believe that there will not be a more profitable and lasting mine in the county. It will be acknowledged, from the foregoing statement, that the agents are fully warranted in recommending the erection of a steam-engine, and nothing but the fact of many parties holding very large interests in the mine, who would have been greatly inconvenienced had calls been made for that purpose, has hitherto prevented such recommendation being fully carried out, although, had it been done, we should probably at this moment be returning more tin than any mine in the county of her dep'h, and large dividends would, doubtless, have been now making. The mine is divided into 428 shares, and the present price is 5*l.* per share, at which rate the purser is empowered by the parties, to whom allusion has been already made, to sell 150 shares, free of calls to the present time.—John Trethowan (Purser): *Falmouth, August* 9.

TAVY CONSOLS MINING COMPANY.

A general meeting of adventurers was held at the Central Hall, Plymouth, on Tuesday last.—John Hitchins, Esq., in the chair.—The captain's two-monthly report was presented, which was of a favourable character, and was received and adopted. A report from Messrs. Clymo and Hitchens was also read, and the following are their observations derived from a personal inspection of the mine:—

The bottom of the 46 fm. level west, although at present poor, is, nevertheless, a very kindly end—being in a large well-defined lode, with stones of ore occasionally; and as it will soon approach the rise of orey ground above, the expectation of making a good discovery here is not without reasonable foundation; the cross-cut south in the cross-course in this level, progresses with fair dispatch towards the wheel-pit lode; its course is regular, and spots of ore are sometimes seen here; we do not expect much till we cut the lode. There is a tribute pitch in the bottom of the 36 fm. level east, in which the lode going down is large, and producing a good quantity of copper ore, very promising to continue and increase—so much so, that we almost regret that the 46 fm. level east had not been continued driving; however, of this, as we consider very important feature of the mine, we shall soon see more, when we shall know better what to recommend to be done here. The rise in the back of the 24 fm. level west is in a lode more than 6 ft. wide, in good ground, producing more than 3 tons of ore per fathom, and daily increasing; it is now as high as the 12 fm. level, and about 8 fms. further on; it is, therefore, advised to drive eastward, in order to hole as soon as possible—the which, when effected, will ventilate the stopes, so as to work with good effect, and then considerable returns will be made; we expect to accomplish this in about six weeks. The 12 fm. level is a disordered piece of ground; nor can we own the lode as being the same we have in the rise; and, although the level is dry, it was thought advisable to cross-cut north, which has been done for about 10 ft.—the whole distance producing stones of spar and ore; nor is the clean killas yet reached; we must, therefore, continue to drive, in order to cut within the main part of the lode, or better ground, to drive through towards the rise to hole. There is a pitch in the bottom of the adit level producing good work. Upon the whole review of your prospects, we can truly congratulate the adventurers on the improvement of this mine since the last meeting; and we have great reason to hope that, ere long, the returns will not only obviate the necessity for any calls, but will enable a sufficient tutwork force to be employed in other discoveries as will lead ultimately to the desired end—that is, large profits—for it is impossible for any man to state when ore shall not be met with in driving on this lode.

This report was also received and adopted, and ordered to be circulated among the shareholders. The statement of accounts showed that 84*l.* 10s. 3d. had been received for a parcel of ore sold in the month of May, while the costs of working amounted to 406*l.* 16s. 10d.; when the call of 5s. per share has been paid up, there will be a balance against the mine of 97*l.* 18s. 10d. Admiral Tremlett's letter to relinquish the 159 shares held by him was accepted, subject to a valuation of the materials and other assets and liabilities of the mine.—A call of 4s. per share to be paid immediately was resolved upon, and the committee of management was reduced from seven to five—Messrs. Rendle, Hutchins, Clymo, Marshall, and Seccombe.—A vote of thanks was then given to the chairman, and the meeting broke up.—*Plymouth Journal.*

TREWALDER MINING COMPANY.

At the bi-monthly meeting of adventurers held at Exeter—R. S. Gard, Esq., in the chair—the report of Capt. T. Richards, the resident agent, was read, the cost-book produced, and the accounts examined and approved, showing—Balance in hand May 24, 167*l.* 6s. 2d.; by call of 2*l.* per share, 376*l.*=543*l.* 6s. 2d.—May labour cost, &c., 101*l.* 0s. 5d.; merchants' bills, 159*l.* 2s. 10d.; June labour cost, &c., 97*l.* 8s. 2d.; merchants' bills (including capstan and shears), 68*l.* 16s.; purchase of steam-engine, 200*l.*=626*l.* 7s. 5d.—showing balance due to purser, 83*l.* 1s. 3d. The purser was instructed to write to the adventurers who have not yet paid the call made 24th May, requiring payment forthwith; and a call of 2*l.* per share was made payable before 31st August.

The following report, from Capt. T. Richards, was read to the meeting:—

Since the meeting of the 23d May, our operations has been principally at surface. A steam-engine of 30-inch cylinder has been purchased and got on the mine, and engine-house built and completed for its reception. The building of stack is in a forward state of progress, and the building of boiler-house commenced. A capstan and shears, &c., have been purchased, and we are now making capstan round, and preparing for its erection. We have also excavated for, built up, and made a lobby to unwater the engine and boiler houses, and are now making a large pool for condensing water. The engineers are getting the different parts of the engine together with all possible speed, and we hope to have the pump work from the foundry quite in time, and every thing completed for putting the engine to work in about three weeks from this time.

WHEAL TRELAWNY MINING COMPANY.

A general meeting of shareholders was held at Webb's Hotel, Liskeard, on Tuesday, the 7th inst.—Charles Chippendale, Esq., in the chair.—The following accounts for March, April, and May, showing a profit of 135*l.* 18s. 10d. were passed, and a dividend of 4*l.* per share declared.—A committeee, composed of Messrs. James and P. Clymo and Mr. Philp, were authorised to arrange for the purchase of the steam-whim now on the mine. Mr. J. Philp was appointed purser *pro tem*, and Mr. James Barrall clerk and storekeeper.—Capt. Kemp's wages were increased to 8*l.* 8s. per month.—The following is an abstract of the accounts:—Lead ores sold April 23, 187*l.* 0s. 6d.; May 21, 182*l.* 7s. 6d.; June 21, 178*l.*; Wheal Trehane adventurers, 82*l.* 10s.; sundries, 3*l.* 1s. 11d. = 555*l.* 19s. 11d.—Cost for March, 139*l.* 15s. 9d.; April, 140*l.* 17s.; May, 141*l.* 8s. 4d. = 421*l.* 1s. 1d.—leaving balance of profit, 135*l.* 18s. 10d.; add left from last account, 832*l.* 13s. 9d.=2184*l.* 11s. 7d.—By dividend of 4*l.* per share, 1040*l.*; leaves balance carried to credit next account, 1144*l.* 12s. 7d.

The following report from Capts. Vivian and Kemp was read:—

August 7.—At Phillips's shaft, the 82 fm. level cross-cut is driven east 10 fms. 4 ft., and the lode intersected this day. The lode in the 72, north of this shaft, is 2 ft. wide, and worth 11*l.* per fm.; in the 72 south the lode is 2½ ft. wide, and worth 12*l.* per fm.; the stopes in the back of this level continue to produce very favourably. The lode in the 64 fm. level north is 5 ft. wide, and worth 13*l.* per fm.; the stopes in the back of this level are still looking well; the lode in the winze sinking under this level south is 2½ ft. wide, and worth 5*l.* per fm. At Trelawny's shaft, the 72 fm. level cross-cut is extended 7½ fms. west. The lode in the 52, north of Trelawny's shaft, is 2½ ft. wide, and worth 13*l.* per fm.; the stopes in the back of this level continue to be fairly productive. The stopes in the back of the 42 are also fairly productive. The lode in the winze sinking under the 52 north is 3 ft. wide, and worth 18*l.* per fm. At the north mine, the lode in the 55, north of Trehane, is 3 ft. wide, and worth 13*l.* per fm. The lode in the 46, north of Trehane, is 3 ft. wide, and worth 6*l.* per fm. Smith's shaft is sunk 8 fms. under the 40 fm. level; the lode in the bottom of this shaft is 3½ ft. wide, and worth 12*l.* per fm.;

the lode in the 40, south of this shaft, is 2½ ft. wide, and worth 6*l.* per fm.; in the same level north the lode is 2 ft. wide, and worth 6*l.* per fm.; the stopes in the back of this level are usually productive. The stopes in the back of the 30 are also usually productive.

WEST WHEAL SETON MINING COMPANY.

The usual two-monthly meeting of adventurers was held at the mine on the 31st July, when a statement of accounts was produced, showing—By copper ores sold (less 1-15th dues, 54*l.* 13s. 9d.), 765*l.* 12s. 8d.—Tutwork and wages for May, 285*l.* 16s. 8d.; ditto June, 266*l.* 12s. 5d.; merchants' bills, 158*l.* 2s. 6d. —showing balance (profit May and June), 55*l.* 1s. 1d.; by call now made, 200*l.*—255*l.* 1s. 1d.; deduct balance of last account, 65*l.* 18s. 1d.—leaves balance in favour of adventurers, 189*l.* 3s. The following report was read:—

July 31.—In handing you the report of this mine, I beg to state that the 50 fm. level south is extended 8 fms. from the engine-shaft, ground favourable; the 50 fm. level north is extended 5 fms.: it is at present suspended, and the men are engaged in cutting a cistern plat, in order to sink under the said level. The south shaft is sunk 8 ft. below the 55 fm. level, on the north part of the lode; the last month the men were engaged in stripping down the south part of the lode, which will at present produce 6 tons of ore per fm. The 55 fm. level, which will produce 3 tons of ore per fathom, is extended east of the shaft 10 ft. The lode in the 45 fm. level west is 6 ft. wide, composed of spar, mundic, and stones of copper ore. The lode in the 30 fm. level west is 4 ft. wide, composed of capel, blende, and stones of ore; in the winze sinking under the 30 fm. level the lode is 6 ft. wide, and will produce 3½ tons of ore per fm.; the stopes in the back of this level will produce 5 tons of ore per fathom. In the 18 fm. level, west of the shaft, the lode is large, composed of prian, spar, mundic, blende, and some stones of copper ore. There is a winze sinking under the 30 fm. level, on the north caunter, which will produce 1 ton of ore per fathom. Since the last report we have sunk a shaft on the western adit, and are now opening east on the lode, which is 4 ft. wide, composed of gossan, mundic, and spar, with some black and yellow ore—this lode has a promising appearance.

SOUTH WHEAL BASSET.—The following is the statement of accounts to 8th August:—Labour cost for May and June, 1701*l.* 8s. 6d.; merchants' bills, 743*l.* 11s. 11d. = 2445*l.* 0s. 5d.—By copper and tin ores sold (less lord's dues, 266*l.* 18s. 1d.), 3736*l.* 18s. 2d.: showing a profit of 1291*l.* 12s. 9d.; add balance in favour of last account, 551*l.* 7s. 11d. = 1843*l.* 0s. 8d.—By dividend of 10*l.* per share, 1280*l.*—leaves balance at bankers, 563*l.* 0s. 8d.—[We shall give the report in our next Journal.]

LEVANT.—At a meeting of adventurers held at the mine, on the 3d inst., the accounts for May and June were presented, showing—Balance of last account, 1172*l.* 11s. 4d.; copper ores sold end of June (less dues), 1486*l.* 5s. 6d.; tin ores sold end of June, 3951*l.* 3s. 10d.; sundry carriage, 43*l.* 3s.; ditto leavings, 18*l.* 2s. 11d.=6671*l.* 6s. 7d.—Payments for May, 1363*l.* 1s. 2d.; subsist, 89*l.* 6s. —Payments for the month of June, 1401*l.* 18s. 1d.; subsist, 102*l.* 10s.; tributers' pay, 315*l.* 19s. 2d.; purserahip and other agency, 28*l.* 7s.; carriage of ore, acid, &c., 110*l.* 2s. 6d.; income and other taxes, rates, &c., 66*l.* 11s. 7d.; stamping tinstuff, 49*l.* 15s. 7d.; coal, 208*l.* 6s. 9d.; bills, 900*l.* 14s. 11d.—Dividend, 800*l.*—Leaving balance in favour of mine, 1284*l.* 13s. 10d.

WHEAL MARY ANN.—At a meeting of adventurers, held at the White Hart Inn, Liskeard, on the 8th inst., the accounts were examined and passed, showing—Ores sold, 2698*l.*—By labour cost, 1720*l.* 11s. 9d.; merchants' bills, 420*l.* 5s. 3d.: leaving balance in favour of the mine, 557*l.* 11s., to which add balance February account, leaves in hand, 1017*l.* 19s. 8d. It was resolved to accept an offer from Mr. West for the erection of a steam-engine for the crusher, payable by instalments not to exceed 28*l.* per month. Captain H. Vivian was appointed agent, at a salary of 7*l.* 7s. per month, and Mr. Roskilly as clerk, at a salary of 5*l.* 5s. per month. The report read represented the appearances of the mine as still favourable.

MINING NOTABILIA.

[EXTRACTS FROM OUR CORRESPONDENCE.]

GREAT WHEAL NEPTUNE MINE is about to be set working by an influential company of London adventurers. The immense profit obtained out of this mine from the former working—when in 10 years upwards of 300,000*l.* worth of copper alone was produced—and the fact that one of the ends was worth 100*l.* per fathom when the works were abandoned, promises well for the shareholders; and, from the magnitude of the undertaking, it cannot fail proving a boon to the neighbourhood, as when fully developed at least 600 to 800 people will be employed on the mine.

LLWYNMALEES.—About 20 tons of rich lead ore will soon be ready for market, and the prospects of the mines are improving every day. Capt. Francis states, that an immense quantity of ore is exposed to sight along the levels, and I have little doubt of this proving one of the richest lead mines in Wales.

WHEAL ANDERTON.—The mine is looking well in the 80 and 90 fm. levels. Pitches have been, I understand, set as low as 6s. 6d., with pretty ground in sight—a good bargain for the takers, and one at 8s. The surface operations are hanging back from want of water for grate water and buddling. What would they have done without steam-power? I consider that the making of the concern, which promises well, if there be only unanimity—but I learn that the accounts for the past two years are to be overhauled. This I am sorry to find, as it does not say much for the business habits of the adventurers, who I expect at their several periodical meetings duly examined and passed the accounts. If they did not, they are much to blame; but if they did, then it is impolitic to re-open them without some good reason, which I am not aware has been advanced.

MINING IN HOLYWELL.—A correspondent writes, informing us that in the mining districts in that neighbourhood the appearances and prospects are most encouraging. Many good discoveries have been made in different parts of the chert formation, and the gay and once flourishing little town of Holywell promises again to resume its usual cheerfulness and prosperity. The beneficial effects of liberality on the part of the lords and their agents is now evident to all in the working of the Milwr Mines, where all appears life and activity. A great number of new shafts are in course of being sunk, and many others cleared, and the eastern side of the Holywell Mountain appeared studded for two miles long with new shafts and whimseys. Too much credit cannot be given to the lords and their agents connected with these mines, and other landed proprietors following their example would make the hearts of thousands glad.

ST. JOHN DEL REY MINING COMPANY.

We have on various occasions inserted communications from correspondents respecting the treatment of slaves in Brazil by mining companies, there worked by British capital and supported by British proprietors; and, in justice, we insert the following explanation, as far as the St. John del Rey Company are concerned. A communication on the subject of the workings will be found in another column:—

SIR,—In a recent Number of your journal there is inserted a letter, signed "Anti-Slavery," containing certain statements of the manner in which the English mining companies abroad treat their negroes. The directors of the St. John del Rey Mining Company request that you will be so good as to insert the following answer thereto, so far as this company is concerned.

The first assertion in this letter is, that the negroes are worked "to such a degree that they are dying off like rotten sheep." It is quite certain that at Morro Velho, where the mines of this company are situated, an epidemic has prevailed for some months past, in consequence of an unusually wet and cold season, which has been destructive of health to a certain extent; but the whole number of deaths, from the 1st Jan. last to the date of the last advices—viz.: the 28th of May—has not exceeded 40, out of a population of 1106.

The next assertion is, that "in order to get a large produce from the mines, the slaves are obliged to work overtime." The number of working hours for the negroes is the same as for the Europeans—viz.: eight out of the twenty-four.

They are, by their own desire, allowed to work "over-time," and they are paid for it in the same manner as Englishmen are. This was allowed as an indulgence to them, to give them the opportunity of acquiring something of their own, and the permission was received by them as a boon; but in order to guard the negroes from the possible consequences of an over eagerness in this respect, the following regulations were adopted:—

1. None but first-class blacks to be allowed to bore on over-time.
2. The mining captain to furnish two lists of the men he permits to bore over-time—viz., one list to the medical officer, and a copy to the superintendent.
3. The surgeon, being furnished with the list, will continually watch and inspect each of these individuals, so as to detect the slightest symptom of any bad effect arising from their additional labour.
4. The night corps not to be allowed to bore on over-time, because it would detain them in the mine till too late an hour in the morning, and would, therefore, prevent them from getting a sufficiency of sleep.
5. Boring on over-time to be confined to the day corps, and (at all events at first) not to exceed one half-day per man per week.
6. But the night corps and the second-class blacks, though excluded from "boring" on over-time, are to be allowed to do surface work on over-time for two hours each day, say from half-past 10 to half-past 12 o'clock. Thus, while the earnest request of the negroes in this respect was complied with, every possible precaution was taken to prevent its leading, on their part, to an injurious excess of labour. The writer further states, that the occupation of the negroes is "highly prejudicial to their lungs." If this be true, the Englishmen employed at Morro Velho share in this disadvantage, there being no negroes employed without their being personally superintended by the English. The average mortality of the establishment gives, however, no support to this assertion. In 1847, the deaths were only 2 6-10ths per cent. for the year; in 1848, they were 5½ per cent. During a part of the latter year the epidemic to which I have alluded prevailed. But, taking the average of the two years, it is below the average mortality of England.

So much in reply to the facts stated in the aforesaid letter. The writer of your City article, in introducing that letter, attacks altogether the system of the employment of negro labour by English companies abroad. He says, that "the employment of slaves by English mining capitalists is enough in itself to require condemnation." The directors of this company entirely deny that imputation.

That eminent body, the "Society for the Propagation of the Gospel," might as well have been impugned for the employment by it, during a very long period, of negroes to cultivate its West India estates. The English companies employ negro labour in Brazil, because it is the labour of the country, and because other labour is not to be obtained there. These companies have done excellent service to the interests of humanity, by showing in that country in what manner a negro ought to be treated. They are not only well fed, well clothed, and instructed in the difference between right and wrong, but each negro has a piece of ground given to him for a garden; and they are generally possessed of pigs and poultry. The truth is that, as applies to the negro under this company, slavery is divested of all its practical evils; while, on the part of the company itself, it is a binding and active obligation to provide for all the wants of the negro in sickness and in health.—W. ROUTH, Secretary: 8, *Tokenhouse-yard, Aug.* 8.

DIED, At Pachuca, in Mexico, on the 4th June last, William Rule, Esq., of Camborne, Cornwall, late Chief Commissioner of the Real del Monte Company.

IMPROVEMENTS IN MANUFACTURING IRON.

[Specification of patent granted to Lawrence Hill, jun., of Motherwell Iron-Works, near Hamilton, Lancashire, civil engineer, for improvements in the manufacture of iron, and machinery for producing the same, dated Aug. 8, 1849].

This invention is stated, in the specification, to be a communication from Henry Burden, of Troy, in the United States. The principle, or character, of this invention is said to differ from all other things hitherto known, with regard to working of iron, in this, that by its agency puddlers, balls, or masses of heated iron, may be worked into rolls, or blooms, by squeezing, or rolling, such puddlers, balls, or heated masses of iron from one end, by subjecting them to the motion, or motions, of rollers, inclined towards the axis of such puddlers, balls, or masses of iron, and moving at right angles thereto, by which means they will be rolled and twisted, and finally forced out rolls, or blooms, of iron.

The drawing annexed to the specification exhibits a machine, or apparatus, which consists of a circular framing, having an underframing also circular; in this framing and underframing bearings, or journals, are provided for receiving the shafts of the rollers, the bearings, or journals, in such framing and underframing being so arranged with regard to each other that the shafts of the rollers working in them will be inclined inwards towards the bottom, or, in other words, supposing that there are four rollers and shafts, the rollers being fixed at the bottom of the shafts, then the tops of the roller shafts fixed in the framing will be ranged around a circle of much greater radius than the radius of the circle which could be drawn within the same roller shafts at the point where they work in the bearings in the underframing; and the radius of the circle around which the rollers, at the bottom of the roller shafts, converge, is still smaller. These rollers, fixed at the bottom of the roller shafts, are made of a peculiar shape, being formed at the upper part of a frustrum of a cone of greater acuteness than the frustrum of the cone adopted at the lower part, which is much flatter. In order to work larger masses of iron, provision is made for adjusting the rollers, and, by means of set screws, retaining them in their proper position. To prevent any evils arising from the continued contact of the rollers with the heated masses of iron, provision is made for allowing water to flow down the roller shafts.

In order to give motion to these rollers, toothed wheels are keyed on to the roller shafts, other toothed wheels gearing into them, and connecting them together, so that motive power being applied to one of the roller shafts, or toothed wheels, the whole set of wheels, roller shafts, and rollers, will be put in motion.

The operation of the machinery, or apparatus, just described, is as follows:—The machinery is fed with the heated masses of iron from the top, when it falls down between the rollers, which, being set in motion as stated, subject it to the squeezing and twisting process, causing it to be elongated, and forced out in the form of a roll of iron.

The patentee states, that he desires it to be understood that he does not confine himself to the precise details of the mechanism set forth in his specification, as he is aware that in several points, which he instances, other mechanical agents may be adopted with the like effect, he having described that which has been found, upon experiment, best suited for the purposes of the invention. The *claim* is substantially to the process of working puddlers, balls, or heated masses of iron, by squeezing or twisting them, by subjecting them to the action of rollers inclined towards such rollers, working around the axis of the masses of heated iron, and at right angles, forming them into rolls, or blooms, whether this be effected by the machiney, or apparatus described, or any mechanical equivalent.

Patent-office and Designs Registry, 210, *Strand, August* 9.

IMPROVEMENTS IN COPPER SMELTING.—The *Diario de Sevilla* publishes an account of some improvements in the reduction of the copper ores of Rio Tinto; these are mostly composed of iron pyrites, with a small proportion of sulphate of copper. Don Felipe Prieto having introduced the method of cementation, which was found, although superior to the old method, to be subject to various defects, which have been remedied by Don Julian Pellon, who has taken out a patent (*privelegio del gobierno*) for the same. He states that, by the method pursued by Don Felipe Prieto, the copper was never cemented completely from its vitriolic solution, unless after a considerable lapse of time; and, by the force of the great affinity which existed in the solution, that a quantity of sulphuric acid, which was always contained in the solution, attacked the iron to such an excess, that sometimes two or three arrobas of that metal were consumed to one of copper; according to the laws of chemistry, but little more than one of cast-iron is necessary; that the copper matte adhered so firmly to the bars of iron, as to cover them with an homogenous casing, which caused an imperfect cementation, by not allowing the liquid to have free contact with the precipitated metal; finally, the iron being attacked by the sulphuric acid, caused that metal in the solution to become electro-positive, so that the water was easily decomposed, and, combining with its oxygen, formed an infinity of acids, which, mixing with the copper matte rendered it more impure and difficult to refine. It does not say in what Don Julian Pellon's improvements consist, but reports that it has been proved, and found practicable, in the presence of several scientific men; and it is expected that poor lodes of copper, which have been neglected in consequence of the heavy expense of smelting, will, by this new process, be able to be worked so as to return a remunerating profit.

THE NEW SILVER MINES IN CHILI.—A letter, dated Panama, June 23, says —"A few months since you probably heard of the rich silver mines discovered in Chili, near Copiapo, where silver mines have been worked for many years; the monthly remittances to Valparaiso from Copiapo, previous to the present discoveries, averaged say $140,000 to $160,000; the remittance now averages $400,000, which has had the effect of reducing the price of silver from $10 4c. to $10 1c. per mark. The discovery of the richest bed of silver, at a place called Tres Puntas, is not unlike the Californian gold finding. A common miner, tired of drudgery, took his mule and travelled in search of treasure, resting at night in the open country, among hills or deserts. On one occasion, finding his location somewhat uneasy, he shifted occasionally a few feet during the night. Not being able to sleep, before starting in the morning, and wondering what could have been the cause of his uneasiness, he cleared away some of the sand where he had lain, and, to his surprise and delight, discovered a complete bed of silver on the surface, very rugged and pointed, but at all events sufficiently so as to have made him restless during the night. As the discoverer, he claimed the right of possession, which he now holds. An offer was made to him of $400,000, cash, before the mine, or bed was disturbed, which he refused. Other mines have been discovered in that district also; this appears fabulous, but perfectly true."

ABERDEEN RAILWAY.—The Government Inspector has received notice that the whole line will be ready for inspection by the commencent of next month.

CHESTER AND HOLYHEAD RAILWAY.—The financial position of this company is anything but a cheering one; the net revenue for 14 months to the 1st July last was 27,310*l.*, but the loss on the steam-boat traffic was 13,115*l.*: making the profit on the combined traffic only 14,195*l.* They are under engagements to pay annually 85,194*l.* on preference shares alone, so that, even with the receipt of 30,000*l.* per annum, which they are to have for the mails, on the completion of the line, more than double the present railway traffic will not pay the interest to the preference holders, leaving out of the question the holders on the original capital of 2,100,000*l.*

EXETER AND CREDITON RAILWAY.—The inhabitants of Exeter and Crediton have presented petitions to the Railway Commissioners, praying for the opening of this line. Though completed three years ago, owing to disputes between the advocates of the broad and narrow gauge, it has never been opened for traffic. The line, by Act of Parliament, was constructed on the broad, or 7 ft. gauge; but, subsequently, a majority of the shareholders determined on altering it to the narrow gauge, and obtained an injunction, still in force, from the Court of Chancery, which precluded the directors from opening the railway on any other than the narrow, or national gauge, the cost for substituting which for the broad gauge is estimated at 1400*l.*

GREAT NORTHEN RAILWAY.—The southern portion of this line is progressing rapidly; the several tunnels at Tottenham, Whetstone, Enfield, South Mimms, and Welwyn, are in active operation, the brickwork of which is being laid in blue lias lime.

LONDON AND NORTH-WESTERN AND GREAT WESTERN DIVIDENDS.—We stated, some months since, that the dividend for the half-year ending 30th of June would be 7 per cent. We can now state, from official authority, that such will be the rate of dividend; and that the payment of it will leave, not as one of our morning contemporaries affirms, a very large surplus, but one of about 10,000*l.* or 12,000*l.* The Great Western dividend will be considerably below that declared at the last half-yearly meeting. The *rate* of dividend has been communicated to us from a quarter entitled to credit; but we think it right, in the absence of official information, not to state the precise amount, the payment of which has been recommended by the auditors.—*Railway Record.*

HULL AND SELBY RAILWAY.—The report to be presented to the half-yearly meeting to-day declares a dividend of 2*l.* 9s. 6d. on the 50*l.*, and of 1*l.* 4s. 9d. on the 25*l.* shares, being at the rate of 9*l.* 18s. per cent. per annum, the sum available for the purpose being 19,014*l.* The directors re-assert their confidence in the validity of the lease of the line to the York and North Midland Railway.

SOUTH WALES.—Fifteen miles of permanent way are being laid in the neighbourhood of Cardiff, and the line from Newport to Swansea is to be opened in the spring.

CARBONA TIN AND COPPER MINING COMPANY,

In 1000 shares.

CONDUCTED ON THE COST-BOOK PRINCIPLE.

The Carboni Mines setts extend over a large area of land lying in the upper portion of the parish of Crowan, in the county of Cornwall, comprising the lands of Polcrbo, Pengelly, and Busceveran, held under leases for 21 years, at a Royalty of 1-18th, and through the centre part of which setts, the junction of the clay-slate or killas and granite occurs. The width from north to south is about half-a mile, and the length east and west on the course of the lodes one mile and a half.

Between the boundaries north and south 17 lodes are known to exist, and all, more or less, of a productive character. In fact, there is no part of the sett but what will yield tin or indications thereof, on removing the meat earth.

There is no other tract of land in the county, held by one set of proprietors, so abundant in veins, lying together in such a convenient position, for a well arranged system of mining upon them, and so situate as to render a small steam-power sufficient for the proper drainage of the whole.

The workings on these lodes below the water level are of a very limited character.

On the great south lode, which is 5 feet wide, yielding tin of a very superior quality, an adit level has been driven 250 fathoms, and a shaft sunk 30 fathoms below it, but, for want of capital, the operations were abandoned. Above the water level, which is 7 fms. from surface, large quantities of tin have in former times been raised, and on re-opening any of these old workings the signs of large and productive lodes remain, and can be traced for 600 fathoms in length.

Two hundred years back, before the ores of copper were known in Cornwall, an adit was taken up by the old tinners at the base of the high lands, near the western boundary of these setts, for the special purpose of unwatering the Carbona tin veins. This adit was driven by them about 150 fathoms, and then abandoned. It appears from an examination of the burrows that the tinners passed through lodes of copper, the value of which was then unknown to them. This adit, on being extended eastward, will shortly reach a large tin lode, varying in size from three to 10 feet wide, which it will unwater at a depth of 40 fathoms from surface, and 600 fathoms in length. In addition to this, it will lay open several well-known copper lodes running up from the killas valley into the granite hill, and which lodes, when worked in the latter part of the last t, and beginning of this century, made returns of ores amounting in value to some millions of pounds sterling, yielding enormous profits to the proprietors.

On this deep adit reaching the high grounds it will give an effectual drainage and ventilation to a vast extent of mineral property, which will then be worked free from all engine charge forty fathoms deep.

In the eastern part of the setts a very valuable and extensive discovery of tin has recently been made, which with stamping power on the mines, is of itself sufficient to pay all costs, and to yield a fair profit to the adventurers.

At present these mines are held by a few persons, who are desirous of parting with a portion of their shares at 5*l.* for each thousandth share. The entire proceeds from such sales to go towards providing steam power for present drainage—for stamping the ores already discovered, and for the effectual laying open the many valuable lodes seen in the setts, on a larger scale than hitherto attempted.

A careful investigation has shown that a capital of 2000*l.* will be amply sufficient to provide steam power for draining water and stamping the ores—erecting all the necessary buildings—draining the old engine-shaft workings and clearing up the bottoms. With this outlay of 2000*l.*, and for a few months a further outlay of 100*l.* per month for labour and materials, a new mineral district will be opened up in great length and depth, which will give employment to large numbers of men and children—turning out vast quantities of copper and tin ores, at once repaying for the capital invested a very handsome interest with a sound and clear prospect of ultimately realizing wealth on a great scale, when the mines become fully laid open.

For further information and for shares, application to be made to Nicholas Harvey, Esq., Hayle Foundry, Cornwall; William West, Esq., Fowey Consols, Cornwall; William Vawdrey, Esq., Penpoll, Hayle, Cornwall; Messrs. Watson and Cuell, No. 1, St. Michael's Alley, Cornhill, London.

[From the *Plymouth Journal.*]

BIACH TOR AND VITIFER MINES.—We learn from the secretary that, although there were only 160 unappropriated shares in the hands of the company, 275 shares were tendered for, at an average price of 5*l.* 8s. 9d. A great many shares have been applied for since the tenders were opened. The old Vitifer lode continues very good in the 10 fm. level west from Dunstan's shaft, and has a little improved in the eastern part of that level.

WHEAL CALSTOCK.—The lode in the deep adit level east has been intersected by a granite course which came in from the north, and after going completely through it, is now going on with the lode on its south side; the lode in this place is very large and promising, composed of black and yellow ore, and malleable copper—this end is driven for 50s. per fathom. The lode in the western stopes is looking very well, the orey part of it being from 3 to 4 ft. wide. The grinder-wheel is finished, and we are busily engaged putting in the grinder. The men are are also getting on fast with the railroad in the western level for bringing out the ore. The deep cutting to the engine-wheel is finished, and a pare of men are engaged making the ore floors by the side of the river; these are within 200 fms. of the grinder.

PLYMOUTH WHEAL YEOLAND.—The north lode has been cut through at 12 fms. under the surface. and it is full 12 ft. wide, tinny throughout, but not rich. The shaft is being continued through the lode. The leader part of the lode has been on the south wall.

PLYMOUTH WHEAL YEOLAND EAST.—The work doing in this mine is not very considerable, as the operations at Wheal Yeoland will throw much light on the value of this undertaking, the engine-shaft on the north lode in that mine being within 60 or 70 fms. of the boundary of this sett.

WHEAL FRANCO.—In the 62 fm. level going west there is a very large orey lode, saving work; the 62 fm. level east continues to improve; a winze from the 47 to the 62 will be shortly commenced over this end. The 62 end is, if anything, improved.

ACCIDENTS.

Droylesden.—J. Thornton was killed by an explosion of fire-damp in Mr. J. Bradbury's colliery here.

Wolverhampton.—J. Penn was killed, by falling 120 yards down a shaft at Stow Heath Colliery.

Derbyshire.—S. Beardsley was so much injured by an explosion of fire-damp, at Messrs. Barber and Walker's colliery, at Eastwood, on the 31st July, that he lingered till the 3d inst., when he died.

Dudley.—W. Skidmore was killed by a fall of coal, and J. Baker injured, but not dangerously, at Messrs. Evers's colliery.

Pontypool.—An explosion of fire-damp occurred at the New Pit at Cwmynantddu, near Pontnewynydd, by which five men lost their lives—four of whom have left large families. The cause of the accident is unknown.

BAIN'S ELECTRO-CHEMICAL PRINTING TELEGRAPH.—A highly-interesting exhibition took place last week at the Hôtel Victoria, Paris, of the new system of electric telegraph, invented by Mr. Bain, who is at this time superintending the laying down of 1600 miles of telegraph on his new principle in the United States. Mr. Bain's apparatus was exhibited, and ably explained by Mr. W. Baddeley, who came from London for the purpose. By this discovery the rapidity of communication is increased from 65 letters, or about nine words, to 1000 letters per minute. Mr. Baddeley was visited by nearly 200 men of science, and gentlemen connected with the Government railroad companies, &c.—*Galignani's Messenger.*—[Mr. Bain's telegraph has been for some time past working between Washington and Philadelphia, where it has given the greatest satisfaction. Arrangements are now making for its employment by the Electric Telegraph Company in London, who have purchased Mr. Bain's patents for Great Britain.—*Mechanics' Magazine.*]

CHEPSTOW RAILWAY BRIDGE.—The contract for constructing this important and scientific bridge, for the South Wales Railway, was last week taken by Messrs. Smith and Willey, engineers, of Liverpool. The whole is to be constructed of wrought-iron, the largest span being about 300 ft., resting on cast-iron piers, or pillars, sunk down to the rock. We wish success to all parties connected with this undertaking.—*Cambrian.*

RAILWAY TRAFFIC RETURNS.

Names of Railways.	*Length.* 1849	1848	Present actual cost.	Price p. share	Div. 1848	*Traffic* 1849	*Return* 1848
Aberdeen	33	16	1,000,547	19½	—	£ 765	—
Belfast and Ballymena	37½	37½	——	19½	5*	564	£452
Birkenhead, Lancashire, & Chesh.	19	15	1,088,804	37	5†	1045	933
Bolton, Blackburn, & West Yorksh.	14	—	786,384	7	—	469	278
Bristol and Exeter	75½	75½	2,660,490	67	—	5611	—
Caledonian	141	141	4,865.135	2 3/4	3	6226	4431
Chester and Holyhead	84	59½	3,358,217	16¾	4	3605	1464
Dublin and Drogheda	35½	35½	774,875	29¾	—	927	775
Dublin and Kingstown	7½	7½	395,915	—	—	2859	1113
Dundee, Perth, & Aberdeen Junc.	47½	47½	544,554	19	6½	1187	1333
East Anglian (Lynn to Ely)	91½	55½	1,167,104	2 ¾	—	337	634
East Lancashire	75½	24	2,628,519	17	5	3578	1172
Eastern Counties and Norfolk	322	295	13,027,069	8¾	—	16510	16109
Eastern Union	80½	50½	1,712,703	13	—	1780	1394
Edinburgh and Glasgow	57½	52½	2,644,378	40¾	6	1869	4563
Edinburgh and Northern	78	34	2,232,115	10¾	2	3072	1913
Glasgow, Paisley, and Ayr	102½	74	2,574,330	54¾	3	3453	2603
Glasgow, Paisley, & Greenock	23	23	848,328	16¾	2	1356	1439
Gt. Northern & East Lincolnshire	126	—	4,255,171	9¾	5†	2429	—
Gt. Southern & Western, Ireland	168½	110½	3,172,519	33¾	6†	4414	4046
Great Western	230½	206½	14,608,815	77	6¾	23498	21830
Lancaster and Carlisle	70	70	1,476,102	54¾	4¾	2643	2113
Lancashire and Yorkshire	206½	127½	9,218,450	84	5¾	14896	11927
Liverpool, Crosby, & Southport	13	—	84,455	3¾	—	206	273
London and North Western	435	428	25,077,942	129¾	7	52031	50179
London and Blackwall	5½	4	1,299,675	4	1-12	1075	1244
London, Brighton, & South Coast	170	162½	6,382,281	37½	2½	17350	14454
London and South-Western	216½	194	7,510,689	34¾	5½	13677	10964
Londonderry and Enniskillen	14½	14½	171,026	16	—	143	163
Manchester, Sheffield, & Lincolnsh.	129½	94½	6,048,679	34¾	5	5187	3200
Midland Company	471	423½	14,042,340	65½	5½†	23887	23498
Midland Great Western (Irish)	50	36½	725,332	24¾	4†	1356	861
Monklands	37	—	500,000	—	6	—	—
North British	109½	83	3,649,055	13	4½	4010	3711
Scottish Central	45½	—	1,364,228	22½	7	1530	986
Shrewsbury and Chester	48	23	969,618	14¾	5	1614	651
Shropshire Union	30	—	——	2¾	—	318	—
South Devon	57½	29	1,909,232	12 13	5	1884	1778
South-Eastern	165½	165½	8,116,914	21¾	5½	12106	12089
Taff Vale	40	40	879,110	—	7½	1988	1870
Ulster	36	36	733,929	45¾	—	846	749
West Cornwall	13	—	——	—	—	—	—
Whitehaven Junction	12	12	150,879	9¼	3	239	175
York, Newcastle, & Berwick	269	242½	6,827,849	19¼ 20	7	14100	13336
York and North Midland	255½	234	4,983,618	29½	7	8966	9420

Current Prices of Stocks, Shares, & Metals.

STOCK EXCHANGE, Saturday morning Eleven o'clock.

Bank Stock, 7 per Cent., 199½
3 per Cent. Reduced Ann., 92¾ ⅞ ¾ ⅞
3 per Cent. Consols Ann., 92¾ ⅞ ¾ 3
3¼ per Cent. Ann., 93¾ ⅞ ¾ ⅞
Long Annuities, 8¾
India Stock, 10½ per Cent.,
3 per Cent. Consols for Acc. 92¾ ⅞ ¾
Excheq. Bills, 1000*l*., 1½d. 46 48 49 pm.

Belgian, 4½ per Cent.,
Dutch, 2½ per Cent., 53½ 2¾ 3½ 3 2¾
Brazilian, 5 per Cent., 85½ 5
Chilian, 6 per Cent., 93½
Mexican 5 per Cent.,
Russian, 5 per Cent., 107 6½
Spanish, 5 per Cent, 18¾ 19 18¾
Ditto 3 per Cent., 34½

MINES.—There has been a fair proportion of business done this week, especially in leading mines, shares in many of which have found free buyers.

The sale of the 249,937 blocks of tin at Amsterdam being now concluded, we may reasonably expect an advance both in the price of tin and the ore, which had decreased considerably antecedent to this sale. We learn that better prices were realised than generally expected, although we find that there is a great scarcity of the article, both at home and on the continent—consequently, an advance must immediately take place on the ore. Smelters have already refused an improved price for tin, and buyers are becoming anxious.

In consequence of an improvement in Tincroft, there has been an active inquiry for these shares, which have been done at a considerable advance on former prices. The improvement appears to be in the shaft sinking under the 100 fm. level, where they have a splendid course of grey copper ore.

Buyers are to be found for Treviskey and Barrier, South Basset, West Seton, South Frances, and East Wheal Rose, some of which have changed hands during the week. South Tamar, Bedford United, Tamar Consols, Trelawny, Treleigh, &c., have also been sought for.

Shares in the following mines have changed hands during the week:—East Wheal Rose, Devon Great Consols, North Roskear, Treviskey and Barrier, South Frances, South Basset, Trelawny, West Caradon, Bedford United, Tincroft, Tamar Consols, Tavy Consols, Kingsett and Bedford, Treleigh, Esgair Lli, Wellington, and South Tamar.

At the South Wheal Basset meeting, a dividend of 10*l*. per share was declared for the months of May and June, leaving a balance in hand of 568*l*.; the profit on the two months amounted to 1291*l*. 12s. 9d.

At the Levant meeting, a dividend of 5*l*. per share was declared, leaving a balance in favour of the mine of 1234*l*. 13s. 10d.

At the Wheal Trelawny meeting, the statement of accounts showed a profit of 1351*l*. 18s. 10d. for the months of March, April, and May, and a dividend of 4*l*. per share was declared, leaving a balance in hand, with the amount left from last account, of 1144*l*. 12s. 7d. The agent's report represents the mine in a very gratifying and prosperous position.

At the Wheal Mary Ann meeting the accounts showed a profit on March, April, and May, of 557*l*. 11s.; and the balance in hand was 1017*l*. 19s. 8d.

At the Tavy Consols meeting, the accounts showed a balance against the mine of 97*l*. 18s. 10d. A call of 4s. per share was made.

At the Trewalder meeting, the statement of accounts showed a balance of 83*l*. 1s. 3d., due to the purser, whilst arrears of calls amount to 136*l*. The agent reports that the works were progressing most satisfactorily. A steam-engine, of 30-in. cylinder, capstan, and shears, had been purchased, and the whole in course of erection, and the former was expected to be working in about three weeks from date of meeting, when we expect this promising mine will be in full operation. A call of 2*l*. per share was made.

At the West Wheal Seton meeting, the statement of accounts showed a profit of 55*l*. 1s. 1d. on the workings of May and June, leaving a balance of 189*l*. 3s. in favour of the company. The captain's report was highly favourable; the bottom level producing 6 tons of ore per fm. Other levels are also looking satisfactory and encouraging.

At Tylhoyd, Cardigan, in a mine, worked solely by a gentleman at Aberystwith, in driving the deep adit level they have discovered a most valuable lode, although not what we may call rich at present, but, from its general character, may be considered a most important discovery. Other mines in Cardigan are looking remarkably well.

There has not been much business done in foreign mine shares, but Copiapo, St. John del Rey, United Mexican, Guadalcanal, and Alten, have changed hands.

The Copiapo Mine report, for the month of April, has been received; the whole is of a very gratifying character. The Checo Copper Mine is represented as having much improved, especially in the 20 and 40 fm. levels, where they have fine courses of rich ores; the other points of the mine are productive, and hold out promise of improvement. No improvement has taken place at San Pedro; the returns for the month amounts to 56 tons. In the silver mine of Al Fin Hallada, no portion of the lode had been taken down since last advice; but the appearances are of the same favourable character. At San Jose del Carmen it was reported, but not officially, that a rich bunch of silver had been discovered; 38 tons of ore from this had been brought to the city, and was in course of amalgamation. The Carmen Alto, Plomiza, and Loreto Mines, are represented in a very promising position. From the gold mines, several tons of good orey work has been broken from the lode; but the value of the whole cannot be given with precision before the next advices, when a remittance of both gold and silver may be expected. The whole of the troops are engaged in conveying copper ore for freighting the *Sion*.

Letters from the Alten Mines have been received; which, though they convey no advice of actual improvements, yet fully confirm former prospects.

The Royal Mail Steam-Packet Company's ship, *Teviot*, arrived at Southampton, on Sunday last, with the usual British and foreign West India mails, having on freight gold and silver, value $1,111,008; gold dust, value 2122*l*.; British silver, value 2231*l*.; old silver, value 370*l*.—total value in specie, 226,917*l*. sterling. The Peninsular and Oriental steam-ship, *Euxine*, arrived on Sunday, bringing on freight specie, valued at 50,000*l*.

HULL, THURSDAY.—The market has given way since we wrote last week, and has at present a very weak appearance. The Hull Flax and Cotton Mill Company declared, at their meeting yesterday, 4 per cent. for the half-year, which makes, with the 3 per cent. previously paid, 7 per cent. for the year. On account of the reports about Hull and Selby shares, the half-yearly meeting on Saturday is looked forward to with an unusual degree of interest.

THAMES TUNNEL COMPANY

The number of passengers who passed through the Tunnel in the week ending Aug. 3. was—No. of passengers, 14,744. –Amount of money, £61 8s. 8d.

TIN TRADE.—The whole of the 249,937 blocks of tin advertised for sale by the Nederlandsche Handel Maatschappij, were sold on the 2d inst., at the White Swan, in Amsterdam. The greatest portion of the lots realised 40 florins per centner—some few fetched, however, as high as 40¼ fl. and 40½ fl.; the average price on the spot would be equal to 66*l*. sterling per ton, exclusive of commission and charges. A very inconsiderable quantity was purchased on English account, being mostly secured for continental consumption. The next sale, which is fixed for August, 1850, is not expected to exceed 120,000 blocks. As English manufactures are not allowed by existing treaties to be exported direct to Java and other Dutch colonies, doubts are expressed, even when the repeal of the Navigation Laws come in force the 2d January ensuing, that Banca tin will be allowed to be entered for home consumption.

[FROM A CORRESPONDENT.]

There has been a sale of a two years' stock of tin from Amsterdam, which has been brought over here; but the London dealers, wishing to depress the market, would not give a fair price.—A purchaser has, however, been met with; but the tin, it is said, is to go to the continent, where it is much wanted. The price has advanced here—there being scarcely a slab in the market, and it is likely still further to advance. A meeting of the tin smelters was held on the 9th inst., the particulars of which have not transpired.

THE MODUM COBALT WORKS.—These works were finally brought to the hammer on the 20th July; they were purchased by the London firm of Goodhall and Reeves for $130,000. The stock of oxide of cobalt (4800 lbs.), which was warehoused in Drammen, as a security to the Government for their advance, was sold to the merchants of Christiana for about $11,300. The arsenic was likewise purchased by a merchant of the same place. Baron Bennecke Von Groditzberg, the late proprietor, offered $131,000: his bid was not taken, as the guarantee he offered was not considered sufficient by the *Sorenskriver*. The company formed in Christiana to purchase the works, had subscribed a capital of $82,3000, which, not being sufficient to pay the outstanding mortgages, prevented any opposition on their part.

MINING IN SCOTLAND.—We understand that the Marquis of Bredalbane is about to commence working the deposits of lead and copper on his estates in Perthshire. A German gentlemen of scientific attainments has been engaged to report on their capabilities, and make assays, with a view to their ulterior development.

VALLEY OF LOETSCHEN SILVER LEAD MINES.—The long pending question as to the right of proprietorship to these mines, we understand, was to be heard for the first time, on the 10th inst. before the civil tribunals at Sion.

LEAD ORE POISONOUS TO ANIMALS—CAUTION.—Mr. R. Walker, of Matlock Bath, having noticed a valuable cow of his pining away, and refusing her food, called in a veterinary surgeon, notwithstanding whose skill she died in a few days. On examining the stomach, it was found to contain a quantity of lead ore in grains, from the size of a pin's head to a pea. As it is well known that all the salts of lead are powerful poisons to animals, great caution should be used by miners from suffering the ore to get among their neighbour's fodder.

PRICES OF MINING SHARES.

BRITISH MINES.

Shares.	Company.	Paid.	Price.
1000	Abergwessin	8	5
1024	Alfred Consols	8½	9
1000	Antimony & Silver-Lead	5	—
1024	Ashburton United Mines	8½	12
1624	Balleswidden	9	18
128	Balnoon Consols	42½	50
10000	Banwen Iron Co.	6	6
1000	Barristown	5½	1½ 2
1000	Bawden	1	1¼ ½
4000	Bedford	2¼ 3½	3¾ 4
1280	Birch Tor Tin Mine	10½	5¾ 6
8000	Blaenavon	50	12½
5000	Blisland Consols	1	6
100	Botallack	182	25
120	Brewer	5	5
10000	British Iron, New, regis.	12	8
—	Ditto ditto, scrip	10	10
2400	Bryn-ar-ian	—	6
128	Budnick Consols	52½	10
1000	Callington	22	10 11
1000	Camborne Consols	6	6 6½
20000	Cameron's Steam Coal	7	1
256	Caradon Copper Mine	9½	1½
256	Caradon Mines	22½	10
256	Caradon United	24	5 8
256	Caradon Wh. Hooper	21	4¾
1000	Carn Brea	15	105
3000	Cartnew Consols	1½	5
114	Charlestown	220	—
500	Comblawn	5½	4½
128	Comfort	45	50 60
256	Condurrow	20	70 75
2560	Cook's Kitchen	14	2¼ 3
1000	Coombe Valley Quarry	3½	4½
1000	Copper Bottom	1½	6½
900	Court Grange	5	10
212	Craddock Moor	23½	5
128	Creeg Braws	120	30
500	Cubert Mine	12½	—
1000	Cwm Erfin	3	2¾ 3
300	D. Prior & Buckfastleigh	—	—
7100	Derwent	8½	5
845	Devon & Courtenay Con.	7½	2 3
1024	Devon Great Consols	1	190 195
1000	Dhurode	2	5
182	Dolcoath	30	15
2560	Drake Walls	5½	3 4
10000	Durham County Coal	45	9
3000	Dyingwm	10	12½
512	East Alvenney	5½	6
2500	East Birch Tor	3	3
112	East Caradon	47	47
2048	East Crowndale	6½	4
512	East Combe Silver-Lead	6½	6½
128	East Pool	15	70
9000	East Tamar Consols	½	¾ ⅞
94	East Wheal Crofty	125	65 70
1024	East Wheal Fortune	2	3
128	East Wheal Rose	50	600
—	East of Scotland Iron Co.	5	1½
123	East Wheal Seton	14	10
1280	Esgair Lli	1½	4 4½
248	Exmoor Wh. Eliza	6	6
494	Fowey Consols	40	45
1024	Freidd Llwydd Mines	1½	3½
6400	Gadair	2	¼ ½
4000	Gen. Mining Co. for Irel.	1½	1½
256	Gonamena	44½	16
128	Goonvrea	4	2
256	Grambler & St. Aubyn	80	8 9
100	Great Consols	1000	180
512	Gt. Wh. Rough Tor Con.	18½	18 20
6000	Growa Slate Company	5	5
256	Gwinear Consols	7	—
6000	Heigniston Down Con.	1½	¾ 1
256	Herodsfoot	27	15
10000	Hibernian	12½	1½
239	Hobb's Hill	6	1½
1000	Holmbush	22	8 10
1536	Holne Park	2	2 4
1024	Kingsett and Bedford	1½	3½ 4½
787	Kirkcudbrightshire	8½	2½
2048	Lamberooe Wh. Maria	8	2½
252	Lanarth Consols	—	4
128	Lelant Consols	90	40
160	Levant	—	200
1000	Lewis	17	9½ 10
1000	Llwynmalees	8	6½ 10
3600	Llynvi Iron	50	50
253	Lostwithiel Consols	23	10
6000	Marke Valley	10	¾ 1
5000	Mendip Hills	3½	1¼ 1½
128	Metha	34	—
20000	Mining Co. of Ireland	7	4
1280	Nant-y-cria	5	5
256	New East Crowndale	3½	2½
100	North Pool	45	500
140	North Roskear	5½	140
262	North Wh. Leisure	1½	2
256	North Wheal Basset	10	10 12
15000	Northern Coal Co.	23	2
128	Par Consols	55½	650
8000	Pennant & Craigwen	2½	2
1024	Penzance Consols	22s 3d.	3
512	Plymouth Wh. Yeoland	6½	6
200	Polsaith Consols	5½	4½
2500	Rhoswiddol & Bacheiddon	10	10
10000	Rhymney Iron	50	13
10000	Ditto New	7	6½
1000	Rosewall Hill	1	5
256	Rosewarva Mines	—	12
2048	Runnaford Coombe Tin	½	5

BRITISH MINES—continued.

Shares.	Company.	Paid.	Price.
9000	South Tamar	½	1 1½
128	South Caradon	5	350
1100	South Dolcoath	5	½ 1
256	Sth. Friendsh. Wh. Ann	30	28 30
256	South Molton	5	14½ 15
256	South Tolgus	16	40 45
256	South Trelawny	28½	5
2000	South Wales Mining Co.	½	1 1½
128	South Wheal Basset	20½	365
124	South Wh. Frances	160	255
256	South Wh. Josiah	—	3
1000	South Wh. Maria	2½	1½
10000	Southern & Western, Irish	2	4
280	Spearne Moor	30	40
256	St. Austell Consols	9	—
94	St. Ives Consols	—	80
128	St. Michael Penkivel	5	10½
999	St. Minver Consols	1	6
1000	Stray Park	43	17½
9600	Tamar Consols	3	7½ 8
1024	Tavy Consols	6½	1½
6000	Tincroft	7	12½ 13
1000	Tin Vale	2½	½
58	Tokenbury	170	10
256	Tregorden	2	5 6 7
256	Trehane	1½	25
5000	Treleigh Consols	6	2½
2000	Trenance	3	—
96	Tresavean	10	95
120	Trethellan	5	15 16
120	Treviskey and Barrier	130	110
288	Treveau	1½	1
200	United Mines	50	150
256	Wellington Mines	25	38 40
128	West Buller	10	275
256	West Caradon	20	117½ 20
512	West Fowey Consols	40	12
256	West Providence	9	17½ 20
200	West Seton	45	75 80
120	West Trethellan	5	16
256	West United Hills	—	4½
512	West Wheal Frances	1½	2
256	West Wh. Friendship	9	8
3725	West Wheal Jewel	12	¾ 1 ¼
256	West Wheal Tolgus	80	10
256	West Wheal Treasury	19	4½ 5
1024	Whiddon Mines	4½	2
5200	Wicklow Copper	5	8½ ¾
107	Wheal Adams	79	30
1000	Wheal Agar	—	6
256	Wheal Albert	10	1
240	Wheal Anderton	25½	21
128	Wheal Ann	—	50½
512	Wheal Anna Maria	7	8
1024	Wheal Ash	4½	8
120	Wheal Bal	5½	15
256	Wheal Benny	14½	2
1024	Wheal Bray	10	10
256	Wheal Bleucowe	21	12
232½	Wheal Calstock	9	20 25
268	Wheal Courtenay	12½	—
256	Wheal Fortescue	15	—
388	Wheal Franco	27	12 15
128	Wheal Harriet	45	—
100	Wheal Henry	—	25
1024	Wheal Lawrence	2½	2½
112	Wheal Margaret	79	225
512	Wheal Mary Ann	5	25 26
208	Wheal Mary Consols	60½	8
360	Wheal Oak	6	7½
—	Wheal Penhale	—	4½
210	Wheal Prospect	4	7
120	Wheal Reeth	41	150
128	Wheal Rose	60	3
198	Wheal Seton	214	250
180	Wheal Sisters	35½	5
494	Wheal Sophia	4½	5
128	Wheal Spearne	10	68 70
128	Wheal St. Ann	30	35
550	Wheal Trescoll	9	10 15
260	Wheal Trelawny	7½	72½
256	Wh. Tremaine (St. Ervan)	9½	2½
1024	Wheal Tremayne	9½	3 4
92	Wheal Tryphena	140	100
1000	Wheal Vincent	2½	7
256	Wheal Viow (Perranz.)	½	[illegible]
184	Wheal Vyvyan	—	60
250	Wheal Williams	28½	8

FOREIGN MINES.

Shares.	Company.	Paid.	Price.
5000	Alten Mining Company	14½	2½
15000	Asturian Mining Co.	15	3½ ¾
20000	Australian	3	4 4½ ¾
10000	Anglo-Mexican Co.	100	¾
12374	Ditto Subscription	25	1½
6000	Barossa Range	1½	1½ ¾
3000	Bolanos	150	1
2000	Ditto Scrip	11	1½
10000	Brazilian Imperial	23	3
12000	Cobre Copper Co.	40	23
10000	Copiapo Mining Co.	14	3 3½
20000	General Mining Ass'n.	20	14
4000	Guadalcanal	5	6½
5000	Kinzigthal Mining Ass.	2	1½
5051	Mexican Company	59½	—
2000	Mexican & South Amer.	8	1 1½
5000	National Brazilian	30	3½ ¾
104000	N. Brit. Australasian	1	½
7000	Royal Santiago	10	5½
11000	St. John del Rey	15	9½
43174	United Mexican .. Av.	28½	3 3½

*** *We should feel greatly obliged by agents, or others interested, furnishing us with such corrections for our Share List as we may not have received through our usual channels of information—our object being, to present as accurate a list of prices as can be obtained—to procure which, we solicit the aid of correspondents in general.*

LATEST CURRENT PRICES OF METALS.

LONDON, AUGUST 10, 1849.

ENGLISH IRON. *a*	per ton.
Bar, bolt, & square, London	£6 0 0
Nail rods	7 0 0
Hoops	7 15 0—8
Sheets (singles)	8 15 0—9
Bars, at Cardiff & Newport	5 0 0–5 5
Refined metal, Wales*	3 10 0—15
Do. anthracite*	3 15 0
Pigs in Wales	3 5 0—4
Do. do. forge	2 15—3 0
Do., No. 1, Clyde .... net cash	2 7 0
Blewitt's Patent Refined Iron for bars, rails, &c., free on board at Newport*	3 15 0
Do., do., for tin-plates, boiler plates, &c., ditto	4 10 0
Stirling's Patent Toughened Pigs, in Glasgow	2 15—2 17
Stirling's Patent Toughened Pigs, in Wales	3 15—4 10
Staffordshire bars, at the works	6 0—6 10
Pigs, in Staffordshire	2 15—3 0
Rails	5 0 0
Chairs	4 0 0
FOREIGN IRON. *b*	
Swedish	11 10 0—12
CCND	—
PSI	—
Gourieff	—
Archangel	—
FOREIGN STEEL. *c*	
Swedish keg	13 15 0—14
Ditto faggot	15 0 0
ENGLISH COPPER. *d*	
Sheets, sheathing, & bolts, *p. lb.*	0 0 9
Tough cake .... *per ton*	79 10 0

Tile	£78 10 0
Old copper *e* .... *per lb.*	7½d
FOREIGN COPPER. *f*	
South American, in bond	—
ENGLISH LEAD. *g*	
Pig .... *per ton*	15 15 0
Sheet	16 15 0
Red lead	18 0 0
White ditto	22 0 0
Patent shot	19 15 0
FOREIGN LEAD. *h*	
Spanish, in bond	15 0—15 5
American ditto	—
ENGLISH TIN. *i*	
Block .... *per cwt.*	3 13 0
Bar	3 14 0
Refined	3 19 0
FOREIGN TIN *k*	
Banca, in bond	3 12 0
Straits	3 10 0
Peruvian (6 mo 2½ p. ct. dis.)	—
TIN-PLATES. *l*	
IC Coke .... *per box*	1 7 0
IC Charcoal	1 11 0
IX ditto	1 17 0
SPELTER. *m*	
Plates, warehoused .... *per ton*	14 10—14 15
Ditto, to arrive	—
ZINC. *n*	
English sheet .... *per ton*	22 0 0
QUICKSILVER *o* .... *per lb.*	0 3 2

Terms.—*a*, 6 months, or 2½ per cent. dis.; *b*, ditto; *c*, ditto; *d*, 6 months, or 3 per ct. dis; *e*, 6 months, or 2½ per cent. dis.; *f*, ditto; *g*, ditto; *h*, ditto; *i*, ditto; *k*, net cash; *l*, 6 months, or 3 p. ct. dis.; *m*, net cash; *n*, 3 months, or 1½ p. c. dis.; *o*, ditto, 1½ dis.
* Cold-blast, free on board in Wales.

REMARKS.—The improvement in the iron trade, noticed last week, still continues; the demand for all descriptions of iron is good, and the market free from speculation. Many of the large buyers, who have withheld their orders for some time past, are now anxious to get in stock, which may be accounted for by the flattering reports received from the country, as to the state of the crops, and the general prospects of the harvest. Letters, received from Hamburg, mention that the Danish blockade of the Elbe and the Weser will positively be raised on the 11th inst. It is confidently expected this circumstance will cause large orders to be sent here, after so long a suspension of our commerce with the north of Europe. Welsh bars are firm at 5*l*. 5s. at the port. Staffordshire manufactured iron is in good request, and higher prices have been obtained for hoops, sheets, and rods. In Scotch pig iron a small advance has been realised, and the market must be written firm at 45s. 6d. to 46s. for mixed numbers, 46s. 6d. to 47s, for No. 1, and 45s. for all No 3, net cash, free on board at Glasgow, at which rates there are buyers, and but few sellers.

MONTHLY REPORT.—IRON.—Welsh bar iron has been in rather better demand during the month, and the price is firm at our quotations. For Staffordshire iron, about 10s. per ton beyond the rate of last month are demanded. In Scotch pig iron only a moderate amount of business has been done; the price has varied little, and is now 45s. per ton for mixed Nos., ordinary brands, free on board at Glasgow; and 47s. to 47s. 6d. for No. 1, Gartsherrie.—COPPER is in fair request.

TIN.—Little business has of late been done in this article—parties waiting the result of the 240,000 slabs Banca tin offered for sale in Holland, by the Dutch Trading Company. Intelligence has just been received of the whole quantity having been sold, chiefly to Dutch speculators, at prices equal to 67s. 6d. per cwt., free on board. Tin plates continue scarce, and are much enquired after for immediate delivery.

LEAD is in fair demand.

SPELTER has been extremely flat during the month, and the price has declined 15s. to 20s. per ton. The stock is small—only 1536 tons, against 2942 tons, at this period last year; but, in the expectation of large quantities to come in from the continent, on the raising of the Danish blockade, little dispositon to purchase is at present evinced.

EXPORTS OF METALS TO ALL INDIA FROM LONDON AND LIVERPOOL, FOR THE FIRST SEVEN MONTHS OF 1848 AND 1849.

Metals.		1848.	1849.	*In. in* 1849.	*Dec. in* 1848.
Spelter	*Tons*	2081	2501	420	—
Copper		2238	3547	1309	—
Iron, British		12674	19521	6847	—
Ditto, foreign		165	1169	1004	—
Tin-plates	*Boxes*	2906	8052	5146	—
Lead	*Tons*	406	1915	1509	—
Steel		109	565	456	—
Quicksilver	*Bottles*	15	27	12	—

MANCHESTER, AUGUST 7.—There was a better feeling visible on 'Change to-day, and a more general demand for Scotch pig-iron from consumers was remarked; a slight advance was easily obtainable, but there is no desire on the part of the merchants to force sales, even at this advance, which is nearly 1s. below the Glasgow prices. Staffordshire iron remains also in a fair demand at fully last week's rates, and the market on the whole closed with an upward tendency; our quotations for Scotch pig is 45s. cash, 45s. 6d. to 46s. three months open delivery in the Clyde, and 51s. 6d. to 52s. 6d. per ton at Runcorn and Fleetwood.—*Manchester Examiner*.

JOINT-STOCK BANKS.

Shares.	*Companies.*	*Paid.*	*Div. p. cent.*	*Price.*
22,500	Australasia	£40	£3	£23
20,000	British North American	50	6	40
20,000	Colonial	25	5	7½
20,000	Commercial of London	20	6	20½
60,000	London Joint-Stock	10	6	16
40,000	London and Westminster	20	6	24¾
10,000	National Provincial of England	35	5	35
20,000	National of Ireland	22½	6	18¾
20,000	Provincial of Ireland	25	8	39¾
10,000	South Australia	22½	—	18
20,000	Union of Australia	25	6	25½
60,000	Union of London	10	6	10½

LEAD ORES.

Ticketings at the White Horse Hotel, Holywell, August 9.

Mines.		*Tons.*	*Price.*	*Purchasers.*
Maes-yr-erwddu (Talargoch)		30	£ 9 15 6	Mather & Co.
ditto	ditto	30	9 15 6	Newton, Keates, & Co.
ditto	ditto	30	9 16 6	ditto.
Coetia Llys	ditto	25	10 3 0	Mather & Co.
Hendre		100	9 10 6	ditto
Holywell Level		8	10 6 0	Newton, Keates, & Co.
ditto		4	11 18 0	J. P. Eyton.
Deep Level (Halkin Mines)		50	9 10 0	Newton, Keates, & Co.
Fron-fownog		45	9 5 6	Walker, Parker, & Co.
Aberdure		10	9 11 6	J. P. Eyton.
Talacre		60	10 15 0	Walker, Parker, & Co.
Maes-y-safn		50	9 9 0	Newton, Keates, & Co.
Eagle Rock		20	9 7 6	ditto
Total tons		462.		

Sold at Aberystwith, on the 6th of August.

Mines.	*Tons.*	*Price.*	*Purchasers.*
East Logylas	65	£ 9 11 0	Walker, Parker, & Co.
ditto	65	9 10 0	Panther Smelting Co.
Cwm-ystwyth	60	9 7 6	ditto.
Total tons	190.		

BLACK TIN

Mines.	*Tons.*	*Price per Ton.*	*Purchasers.*
Heigniston Downs	4	29 5 0	Daubuz, Calenick, & Bissoe.

COPPER ORES.

Sampled July 25, and Sold at Andrew's Hotel, Redruth, August 9, 1849.

Mines.	*Tons.*	*Price*	*Mines.*	*Tons.*	*Price.*
Carn Brea	90	£10 3 0	Levant	51	£3 9 6
ditto	85	6 10 6	ditto	10	36 8 0
ditto	84	8 19 6	Wh. Tremayne	72	3 14 6
ditto	83	5 10 0	ditto	56	3 2 6
ditto	82	7 13 6	ditto	55	1 8 6
ditto	78	4 13 6	Wh. Agar	54	6 17 0
ditto	77	3 6 6	ditto	50	2 3 0
ditto	59	9 15 0	ditto	46	2 3 6
ditto	58	4 2 0	West Wh. Seton	98	6 4 0
ditto	47	8 1 6	ditto	42	3 19 0
ditto	30	2 6 0	Wellington Mines	57	5 1 6
Tywarnhayle	110	2 15 6	ditto	47	7 18 0
ditto	89	2 15 6	ditto	14	3 13 0
ditto	64	7 15 0	West Wh. Buller	73	8 18 6
ditto	42	2 19 6	ditto	26	5 15 0
ditto	31	3 2 6	Creeg Braws	63	4 19 6
ditto	14	3 19 0	ditto	21	3 14 0
Nancekuke	57	4 2 6	Wh. Penhale	45	6 1 6
ditto	20	2 17 0	Polberrow Consols	35	11 18 0
ditto	15	3 6 0	South Wh. Fortune	22	7 15 0
Par Consols	105	5 11 6	Carthew Consols	16	1 13 6
ditto	93	6 14 0	Wh. Venture	8	7 15 0
ditto	87	5 15 6	Wh. Caroline	5	3 8 6
Levant	66	3 17 6	Wh. Friendly	3	18 8 0
ditto	60	3 7 6			

TOTAL PRODUCE.

Carn Brea	773	£5190 2 6	West Wh. Buller	99	£801 0 6
Tywarnhayle, Nancekuke	442	1666 19 6	Creeg Braws	84	391 2 6
Par Consols	285	1710 18 0	Wh. Penhale	45	273 7 6
Levant	187	999 9 6	Polberrow	35	416 10 0
Wh. Tremayne	183	521 11 6	South Wh. Fortune	22	170 10 0
Wh. Agar	150	575 3 0	Carthew Consols	16	26 16 0
West Wh. Seton	140	773 10 0	Wh. Venture	8	62 0 0
Wellington Mines	118	711 13 6	Wh. Caroline	5	17 2 6
			Wh. Friendly	3	55 4 0

Average Standard............£ 95 19 0 | Average Produce 8¾
Average Price per ton £5 10 6
Quantity of Ore ....2595 tons | Quantity of Fine Copper, 224 tons 2 cwts.
Amount of Money £14,363 0 6
LAST SALE.—Average Standard......£ 98 14 0.—Average Produce...... 7½.
Standard of corresponding sale last month, 94*l*. 9s.—Produce, 8¾.

COMPANIES BY WHOM THE ORES WERE PURCHASED.

	Tons.	Amount.
Mines Royal	153	£ 607 1 3
Vivian and Sons	460	2658 4 1
Freeman and Co.	232	1450 16 1
Pascoe Grenfell and Sons	883	4549 17 3
Sims, Willyams, and Co.	323	1693 15 3
Williams, Foster, and Co	329	2153 15 9
Schneider and Co.	215	1249 10 10
Total tons	2595	£14,363 0 6

NO SALE on Thursday next, August 16.

Copper ores for sale on Thursday week, at Andrew's Hotel, Redruth.—Mines and Parcels.—Devon Great Consols, Wheal Josiah, Wheal Maria, Wheal Fanny, and Wheal Anna Maria, 1216—Fowey Consols 338—West Caradon 325—Marke Valley 246—Wheal Henry 240—Wh. Friendship 169—Bedford United Mines 119—West Fowey Consols 100—Holmbush 76—Wheal Busy 58—Wheal Pink 54—West Wheal Jewel 53—Tamar Slag 15—Polgooth 12.—Total quantity of ore to be sold, 3041 tons.

COPPER ORES

Sampled July 18, and Sold at Swansea, August 9, 1849.

Mines.	Tons.	Prod.	Price.	Mines.	Tons.	Prod.	Price.
Cobre	116	13½	£10 2 6	Cobre	50	20½	£14 10 0
ditto	115	13½	9 17 6	Santiago	109	11½	8 10 0
ditto	93	13½	9 12 0	ditto	97	11½	8 3 0
ditto	63	21½	15 11 6	ditto	92	11½	8 3 6
ditto	62	21½	16 3 6	ditto	83	11½	8 2 6
ditto	58	21½	16 5 6	ditto	15	19	14 1 0
ditto	80	13	9 1 0	Ballymurtagh	50	4	2 6 0
ditto	43	13½	9 9 0	ditto	42	4½	2 12 0
ditto	71	23	17 6 0	Holden Slag	35	4½	2 10 6

TOTAL PRODUCE.

Cobre	751	£9214 12 0	Ballymurtagh	92	£224 4 0
Santiago	396	3354 5 6	Holden Slag	35	88 7 6

COMPANIES BY WHOM THE ORES WERE PURCHASED.

	Tons.	Amount.
English Copper Company	67	£763 6 8
Freeman and Co.	52	126 14 2
Grenfell and Sons	356	4294 4 0
Vivian and Sons	299	2609 17 0
Williams, Foster, and Co.	364	2809 14 8
Schneider and Co.	7	105 7 6
B. Smith	129	2172 5 0
Total tons	1274	£12,881 9 0

Copper ores for sale August 23.—Cobre 50, ditto 48, ditto 40, ditto 77, ditto 65, ditto 53, ditto 110, ditto 105, ditto 82.—Berehaven 128, ditto 119, ditto 108, ditto 107.—Kapunda 71, ditto 68, ditto 63.—Burra Burra 75, ditto 45, ditto 41, ditto 32.—Knockmahon, 83, ditto 80.—Burra Burra 50, ditto 40. –Chili 12.—Nantmelyn 6.—Total, 1751 tons.

NOTICES TO CORRESPONDENTS.

*** We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

FOURDRINIER'S SAFETY APPARATUS.—It was not thought necessary to answer the question of a "Querist" (Wellington), as a note appeared in that week's paper, appended to a communication from a "Newcastle Collier," expressive of our opinion on the same subject. "Querist" appears one of those waspish spirits who snarl at the inventions of others, however useful. It is useless his continually harping the same tune, about 40 or 50 cwts. of chain falling 250 or 300 yards. Everybody is aware of what are the results in such cases; but we do not believe that the machine would be carried away even by such a weight, and a guard sufficiently strong to protect the men could easily be applied. As, however, wire-rope is both more safe and more economical than either hemp-rope or chain, we have no doubt the time is not far distant when it will come into general use for coal-pit purposes. All who have seen the machine in operation are convinced of its advantages, and of the soundness of its principle; and a few insignificant futile cavillings will not prevent its progressing in public favour.

MINE SHARES IN 1843 AND 1844—"N. C." (Bodmin).—On reference to our volumes, we find that the prices of shares in the six mines mentioned, for the above periods, were as follows:—1843: Trethellan, £170, 250, 230, 330; Tresavean, 1100, 1200, 1200, 750; North Roskear, 300 throughout the year; Treviskey and Barrier, 210, 320. 300, 350; Trewavas, 100, 120, 130, 75; East Wheal Rose—the first quotation is in September, 600, from which they gradually rose to 800, 1000.—1844: Trethellan, £320, 250, 150, 100; Tresavean, 750, 600, 550, 400; North Roskear, 300, 3 5, 340, 350; Treviskey and Barrier, 360, 400, 375, 230; Trewavas, 75, 100, 40, 50; East Wheal Rose, 1000, 1250, 1400, 1500. We have taken four intermediate periods in each year, from which our correspondent may strike a very fair average for the year.

"An Engineer" (Wolverhampton).—A contrivance for obviating smoke was applied, about four years since, on board the *William Fawcett*, one of the Peninsular and Oriental Steam Navigation Company's vessels. The whole of the furnaces were arranged in pairs, and an opening was cut through the water space intervening between each pair of furnaces, so as to permit the smoke from the one to pass through a pipe fitted at the furnace mouth into the ash-pit of the other, and mixing there with atmospheric air, and ascending through the incandescent fuel on the bars of the second furnace, it was consumed. One furnace thus operated as a retort, while the other acted as a furnace; a damper extending between the double bridges being closed when the furnace received a charge of coal, so as to convert it into a retort for the time being As soon as all the gas was expelled from the coal thus introduced, the damper of this furnace was opened, so as to convert it into an active furnace, and the damper of the other furnace was closed, to be in readiness to receive a charge of coal, and no smoke was visible at the chimney while this action proceeded.

"An Enameller" (Cornhill).—The most simple way of obtaining cobalt in its metallic state, is to reduce it from smalt by using one part of smalt with six of soda.

"T. A. C." (Tavistock).—The silver mines in France are not of any great importance. The Mine of Allemont, in the department of the Irère, is situated near the summit of a lofty mountain, composed of beds of gneiss and primitive limestone, inclined in different angles to the west. The veins are numerous, and run in all directions. The ores are native silver, sulphuret of silver, red silver, and a small quantity of muriate of silver. They are accompanied by different ores of cobalt, antimony, and nickel; the matrix is usually clay mixed with iron, calcareous spar mixed with asbestos, and other earthy minerals. Indications of silver have also been observed in the Vosges, where, in a vein of grey copper ore, has been found a certain proportion of this precious metal.

"W. P." (Wych-street).—Muntz's patent sheathing metal, which has been used instead of copper, is an alloy of about 60 copper and 40 zinc. It admits of being rolled hot, whereas the common varieties of brass generally split under such circumstances, and are, therefore, rolled cold, which requires more time.

John Browne (Rochester).—The introduction of guano is of comparatively recent date, but it has long been known to the Spaniards. It is thus mentioned in a treatise by Dr. Alparo Alosono Barba, director of the mines of Potosi, translated by the Earl of Sandwich, 1669:—"Out of the islands in the South Sea, not far from the city of Arica, they fetch earth which manureth the fields. It is called guano (*i. e.* dung)—not because it is the dung of sea-fowls, as many would have it understood, but because of its admirable virtue in making ploughed ground fertile. It is light and spongy; and that which is brought from the Island of Iqueyque is of a dark grey colour, like unto tobacco ground small. From other islands, near Arica, they get a white earth, inclining to a sallow, of the same virtue. It instantly colours waters whereinto it is put, as if it were the best lye, and smells very strong. The qualities and virtues of this, and of many other simples of the New World, are a large field for ingenious persons to discourse philosophically upon, when they shall bend their minds more to the searching out of truth than riches."

"A Student" (King's College).—Copper was named from the Island of Cyprus, where it was extensively mined and smelted by the Greeks.

"A Constant Reader" (Stockton).—Caoutchouc was first brought from America, about the beginning of the last century, moulded into the shapes of bottles and animals, and used for rubbing out the marks made upon paper by a blacklead pencil; but nothing was known of its history till De la Condamine sent an account of it to the French Academy, in 1736, describing it as the inspissated milky juice of a tree called by the natives "Hevee." In the year 1751, Frisnau discovered the same tree in Cayenne. Caoutchouc is now known to be the produce of several trees growing in South America, and also in the East Indies. The American Indian-rubber is said to be chiefly derived from the *Jatropha Elastica*, and the East Indian from the *Urceola Elastica*. Gutta percha was first brought into notice by Dr. Montgomerie. It is the produce of a large forest tree (*Isonandra gutta*), growing in the mountains of Singapore, and in the forests of Johore, at the extremity of the Malayan peninsula, and in Borneo. It is also supposed to abound on the cluster of Islands to the south of Singapore. Its varied uses are now so well known, that a recapitulation is unnecessary here.

F. Michell (Bodmin).—The question, in what consisted a "mine royal," was first decided in the reign of Charles I. The following is the opinion delivered by four of the judges, Feb. 9, 1640:—"Although the gold or silver contained in the base metal of a mine in the lands of a subject be of less value than the base metal, yet if the gold or silver do countervail the charge of refining it, or be of more worth than the base metal spent in refining it, *this is a mine royal;* and as well the base metal as the gold and silver in it belong to the prerogative of the Crown.—John Glanvill, E. Herbert, Ralph Whitfield, Oliver St. John." In the 5th of William and Mary, an Act was passed to prevent disputes and controversies concerning royal mines, wherein it was recited, that the ores containing the precious metals might become the property of the owners, if the Crown did not claim them within 30 days after they were brought to grass—the Crown to pay for copper ore, 16*d.* per ton, tin 2*l.* per ton, lead 9*l.* per ton, and iron 2*l.* per ton. This Act was not to alter in any way the charter of the tinners, or any of the Stannary laws existing in Devon and Cornwall. It is singular, no per centage was fixed of the ore—the term merchantable only being used.

"L. G." (Oval, Kennington).—We have received several diagrams of mechanical arrangements for a substitute for wheels, or wheels which carry their own railway; a manumotive carriage; apparatus for change of power and velocity; avoiding collision on railways; with an index of 38 distinct inventions by the same prolific designer; but, we regret to say, many of them are perfect mechanical abortions; others for purposes which are superseded by far simpler and more scientific means; and we fear "L. G." will not find in his whole category one which will pay him for his trouble and expense. He evidently has a mechanical hobby, and in many of his suggestions displays considerable ingenuity; but the idea of attempting to form a company for the adoption of what he considers the most important—a substitute for wheels—is preposterous. No such arrangement of levers, rollers, and stepping apparatus, can ever equal in power and economy of draught the wheel. From its very complexity, it would be continually getting out of order, even if it could be made to act at all with any mechanical certainty. We noticed this proposed arrangement in the *Mining Journal* of Aug. 7, 1847.

"L. S. M." (Callington).—The silver mines of Stahlberg, in Sweden, are situated about 28 English miles from Upsala. The ore is an argentiferous galena, in a compact limestone, and produces a marc, or a marc and a half, of silver in the centner. The mines have been wrought to the depth of 150 fms. The annual profits, on an average, amount to about 4000*l.*, of which dues at the rate of one-eighth are paid to the State.

"Miner" (Redruth).—The stock work of the German miners is to be considered as a mass of rock, impregnated with metallic matters, in small veins, which come together irregularly, so as to make particular parts extremely rich. The working of such mineral repositories is directed by quite other principles than those which serve for straight veins, of definite magnitude. The stock work is generally opened like a vast quarry, and the excavations are prosecuted irregularly, in the most favourable directions. The copper mine of Pary's Mountain, in Anglesey, the iron mine of Danemora, in Sweden, the tin mine of Geyer, in Saxony, are examples of large stock works.

"A Reader" (Leamington).—The art of making brass was formerly confined to Germany, where the processes were kept very secret. The first brass made in England was by two persons of that nation—Jacob Momma and Daniel Demetrius—who, about the year 1649, established a brass-work at Esher, in Surrey, at a cost of 6000*l.*; but, not meeting with encouragement, they were ruined by their undertaking, and the works were discontinued. Others, however, were afterwards established, and the operators employed English ore of zinc, which had been hitherto transported merely as ballast; but the copper was imported from Sweden, until the revival of our own copper works, in the year 1690.

"G. F. M." (Liverpool).—The first discoverer of electricity is said to have been Thales, of Miletus, who flourished about 600 years before the Christian era. He is reported by subsequent writers to have described the power developed in amber by friction, by which it was enabled to attract bits of straw, and other light bodies, and an attempted explanation of this phenomenon is given in one of his philosophical dogmas.

"J. B. H." (Birmingham).—Anthracite consists of carbon in considerable quantities, with a small proportion of silica; there are several varieties, the principal of which are massive, slaty, and columnar; the massive is of an iron-black colour, occasionally with a splendent metallic lustre—it burns without flame or odour, leaving a white ash. The slaty is of a brownish-black colour, easily frangible, somewhat sectile and brittle; vast deposits of it exist in the United States, the most celebrated of which is the anthracite region, as it is called, of the Susquehanna, in Pennsylvania; it is between 60 and 70 miles long, and about 5 broad, constituting a trough or elongated basin through which the Susquehanna river and Lackawanna creek flow. In England it is found near Walsall, in Wales, in the southern parts of Brecknockshire, Carmarthenshire, and Pembrokeshire, near Cumnock and Kilmarnock, in Scotland, and at Kilkenny, in Ireland. The columnar occurs in prismatic concretions, either straight or curved—it burns without flame or smoke. It is principally found at the Meisner, in Hesse, forming the upper portion of a bed of brown coal, which is covered by basalt. In Ayrshire, and some of the Newcastle pits, it occurs in contact with dykes of greenstone—at the former, frequently passing into plumbago. Being more difficultly inflammable than bituminous coal, it is principally used in limekilns, maltkilns, iron foundries, &c. When ignited in considerable quantities, it burns with a strong and durable heat; much of the difficulty of kindling may be overcome by the addition of a little charcoal, and the proper application of a current of air. In the northern States of America, where common coal is little known, this forms the principal fuel of the maritime cities, and is there in general use for every purpose of raising temperature. At Freyberg, in Saxony, and elsewhere, it is used instead of charcoal in the refining of copper. Mineral carbon, or mineral charcoal, is nearly allied to it; this occurs in thin layers, and fibrous concretions, of a delicate silky-black colour, in most of the coal-fields of Great Britain, at Voitsberg, in Styria, Disko Island, Greenland, and elsewhere.

"Mineralogicus" (Glasgow).—Dr. Garnet accounts for the origin of basalites, by supposing that a quantity of pyrites, very rich in iron, along with argillaceous and other earths, has been forced into a thin liquid mass by the fire of a volcano. On an eruption taking place, that part of the lava, or liquid matter, which is thrown out by the expansive force of the vapours or fire, and brought into contact with the air, cools too suddenly to admit of any regular form, but that which remains quiet within the bowels of the mountain will cool very slowly, and be left without interruption to form crystals, or rather, by the gradual diminution of its bulk, to split into regular pillars, like starch when it is drying.

"Hermes" (Bond-street).—Various opinions have been given of the true situation of Ophir, from whence Solomon fetched the gold for the Temple: the general opinion is that it was somewhere in Abyssinia. An American writer has lately stated that it was California.

"A Shareholder of Holne-park" (City).—On inquiring yesterday at the offices of this company, in Adam-street, Adelphi, we were informed that the secretary had left some days previously, without leaving any address where he could be found.

*** It is particularly requested that all communications may be addressed—
TO THE EDITOR,
Mining Journal Office,
26, FLEET-STREET, LONDON.
And Post-office orders made payable to Wm. Salmon Mansell, as acting for the proprietors.

THE MINING JOURNAL
Railway and Commercial Gazette.

LONDON, AUGUST 11, 1849.

The MINING JOURNAL is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

The improvement in almost all the branches of our internal trade and manufactures, which has been steadily making head for some weeks past, has now penetrated into some of the mining districts also, and a cheering revival of activity in the iron trade especially is one of the first fruits of the general improvement. Our readers are aware that an ascending vivacity in the mining share market, arising out of the better prospects now dawning upon that department of public industry and great fulness of money, has been already noticed in this Journal. We hope and believe that permanent causes are at work, which will sustain and perpetuate these improvements; in fact, it is our opinion, founded upon the nature of the changes through which the great commercial interests of the kingdom have recently been conducted, than when we come to be more familiar with the provisions and resources of the new mercantile laws, to which the well-reasoned and deliberate acts of the Legislature have pledged this great people, we shall find our entire commerce widened, and our progress less subject to those perilous fluctuations which have marked some passages of our civil history. The importations, both of foreign and colonial copper ores, as far as reported during the last fortnight, have been rather under than over the average amount. We must calculate, however, upon their increasing, in consequence of the probable lowering of freights under the new navigation statute, although the attempt now making in the colonies to dress and reduce their own ores may give a re-acting tendency to the balance, and leave the actual imports for the few next quarters not materially different from the few last. At all events, we shall rather rejoice than repine at the increasing prosperity and richness of our mining colonies; and we trust that, beyond their growth in all good things proceeding from the fertility of the soil they occupy, and the diligent habits they learned in the very cradles of this country—that beyond these they will combine order and subordination with the increase of their wealth, and patriotism with the increase of their power.

We trust it will be in the power of the ironmasters of South Staffordshire to grant such terms to their dissatisfied workmen as will result in the satisfactory prosecution of the suspended trade of that district. It would appear, we think, that the state of the iron trade will fairly enable the masters to meet the men in a spirit of concession. When prices were really low and unremunerative, and orders were far less numerous and valuable than we have reason to believe they now are, there was no impropriety in calling upon the men to share the difficulties of the trade, and distribute the burthen, as those upon whom it had undoubtedly fallen were best able to bear it. But now, when a different state of things has fortunately broken in upon them, and the circumstances of the trade will, as we think, admit of an alleviation of the workmen's case, the masters could not do a more gracious thing than yield to their laborious servants as ample a scale of remuneration as it is in their power, with justice and a just consideration of the workmen's claims, to confer. Of course, both parties are quite aware of the injury which all business must sustain from such frequent periodical disturbances; and without pretending to suggest to either party what should be the specific terms of their arrangement, we do hope some immediate method of adjustment, by which the staple business of the district may be resumed, will be cordially sought and found by both the parties interested.

The properties of peat and peat charcoal have been prominently brought before the public by Mr. JASPER ROGERS, C.E., in two able papers read by him at the Botanical Society. The first paper gave an account of the origin of the peat bog, which he described as a great fungus—not, as some writers have stated, a collection of various kinds of vegetable matter, growing and flourishing in summer, and dying and decomposing in winter, to give life to another growth in due season. He demonstrated by diagrams that the peat moss of Ireland was a vegetable product of one family. In one section, a mass, nearly 40 ft. in depth, it was shown that peat at the base had become almost a coal from the pressure from above. After detailing the products of peat moss—as ammonia, pyroligneous acid, tar, and a fatty matter, which has all the properties of spermaceti—he alluded to the samples of charcoal which were exhibited. It appears, by his process, the density of peat charcoal can always be made to exceed that of wood charcoal—in fact, it is only to make the peat as dense as wood to produce equal density in charcoal; and this is very simply done by exhausting the chamber in which the peat is compressed at the same instant that the compression commences. The atmospheric air being withdrawn from beneath, the aqueous matter must follow, and rush into the air-pump; the resistance, therefore, presented to the power of pressure is simply the fibre of the peat; while the vacuum produced underneath, gives the aid of the natural pressure of the atmosphere at top to assist the operation. The present market value varies from 4*l.* to 9*l.* per ton; and it may be sold with large profit for much less. Mr. ROGERS entered into an interesting detail of the advantages of peat charcoal as a fertiliser of the soil, and pointed out how its intermixture with animal excretiæ would at once absorb all the odours and retain its most noxious, but valuable, gases for vegetation. The chemical affinity between the ammoniacal gases, and other atmospheric gases and carbon, and the advantages derived from them, were shown by the truism, that every shower of rain that fell gave a greater supply of the ammonia salts contained in that rain; and by this means not only gave health and strength to the plant, but became a reservoir not only of manure, but moisture, which never ceases to act upon and invigorate the vegetable. The advantages that would accrue to the public, not only in the benefits they would derive from the removal of the obnoxious matter, but the profits which would be derived from the sale of manure, which is now allowed to run to waste, was estimated by Mr. ROGERS to be in London alone of the enormous value of 3,000,000*l.* We by no means are so sanguine as to calculate such flattering results; but the information adduced by him is worthy the calm consideration of the philosopher, and the earnest attention of the enterprising speculator; and the question at this present time is the more interesting, when so many steps are being taken—we trust in the right direction—to ameliorate the suffering peasantry of the sister island.

It is with a feeling of gratification that we reflect that this Journal was the first in London to promulgate the great advantages which would arise to the community at large by the adoption of the measures proposed by Mr. ROGERS. In our Journal of the 31st October, 1846, we directed attention to Mr. ROGERS's pamphlet on the subject (published by RIDGWAY, Piccadilly), because we saw in it the probable means of enabling the ironmasters of England to compete with the world in the production of iron—namely, by using peat fuel and charcoal, in place of coke, the total absence of sulphur from Irish peat, and its other properties—rendering the iron made by it equal to any of foreign manufacture. On the 5th Dec., 1846, we showed how the only difficulty, want of density in the charcoal, had been overcome, as we had anxiously watched its progress; and again on the 30th January, 1847, we pressed it on the attention of all parties connected with the manufacture of iron, feeling convinced that we could not too strongly point out the benefits likely to accrue to the trade from its use. The efforts of Mr. ROGERS have since been rewarded with another discovery, which appears to be one of great importance, and, in a sanatory point of view, of high beneficial tendency—the singular powers of deodorisation and disinfection which peat charcoal prepared under his patent process possesses. Mr. ROGERS professes, by the aid of peat charcoal, to absorb the excretory matter of towns, and thus convert it into a manure; and the fact has been demonstrated, that the intermixture of from two-thirds of peat charcoal to even one-third of the most offensive matter, not only instantly deodorises it, but converts the whole into an apparently dry powder, capable of being packed in sacks, and transported by any conveyance. He proposes that all the excretory matter of towns shall be intercepted before it reaches the main sewers, by means of a tank, partly filled with charcoal, which will allow the extra water to pass away, leaving the solid matter and its elements of nutrition for vegetation behind. He has shown that the affinity between peat charcoal and the noxious gases contained in that matter is so great, that they instantly rush together, and are held by the charcoal, until given out to the root of the plant. We cannot doubt that, if Mr. ROGERS proves his theory and proposition, that it will confer on the country at large an extent of good which it would almost be impossible to estimate. We, therefore, strongly recommend the whole to the most searching scrutiny and closest investigation; for if any means be practically proved which will rid us of our present sewage nuisance, not to speak of the profits from the use of the manure, the boon would be amongst the greatest the country could receive.

Whatever offence the remarks we thought it our duty to make in our last Number, on the state of the ASTURIAN MINING COMPANY, may have given to the directors, and, we understand, they have felt exceedingly sore in consequence, it is quite clear our information was correct; and, from a Royal decree having been issued against the company, the details of which we give in another column, it appears that, in consequence of the ruinous state of the company, and the accounts and management of their affairs in the locality not having been kept and conducted according to the requirements of the Spanish laws, the Royal authorisation is denied them to continue their operations, they having failed to fulfil *their own* statutes, or the regulations of the mercantile legislation. This decree, destructive of the best interests of the shareholders, is, indeed, sincerely to be regretted, and a heavy amount of responsibility undoubtedly lies somewhere. It is well known by every one who has visited the Asturias, that the land held by the company, with respect to all its various productions, both in quantity and quality, coal, copper, quicksilver, iron, lead, limestone, &c., is one of the finest properties in the Spanish territory, or probably in Europe. The shareholders who joined in the undertaking did so from this fact being impressed on their minds, and they entrusted their capital to the management of the directors, believing them to be men in whom the strictest confidence might be placed, both as to their honourable motives in promoting the company, in their general knowledge of mercantile affairs, and their business habits. In doing this, they had well-grounded hopes that the advance of such capital was not only, at least, a safe investment, but one which would return a handsome per centage, and prove the most lucrative foreign speculation in which British capital and British skill had ever been employed. Those hopes, alas! are wrecked; and the pang comes the more severe from the certainty of the real value of the property, had the mines been worked with proper spirit and economy, and the spirit and letter of the laws been strictly adhered to. It will be well if the shareholders escape without being obliged to advance a further call, in addition to the 180,000*l.* already sunk, and with liabilities approaching 20,000*l.*, which, if legal proceedings are adopted, will be increased, even the sale of the property now in negociation will hardly, we fear, bear them harmless.

It will be in the remembrance of our readers, that about twelve months since we stated that a Government Commission had been appointed, ostensibly to inquire into the Privy Seal and Signet Offices, but *really* to investigate the whole system of passing patents. This committee has now made its report, which has been printed and presented to Parliament. From this we gather that they have examined various Government officers connected with the patent grants department, and the principal patent agents; also BENNET WOODCROFT, Esq., C.E., and T. WEBSTER, Esq., barrister, the well-known author of a treatise on the Patent Laws, Cases, &c., and have collected a mass of evidence of the most pertinent character, which clearly shows that it is unnecessary for the Government to revolutionise the whole system, in order to insure protection for all inventions which deserve it, but that it may be effected, in a speedy and effectual manner, by some merely detailed improvements in the practice of the courts. Indeed, the evidence adduced before the committee, has led them to recommend several alterations in the present routine of passing patent grants, some of which, if properly carried out, would confer great benefit on inventors and patentees. We perceive that Mr. F. W. CAMPIN was examined, and that the committee have recommended for adoption several of the points mooted in his petition to the House of Commons, given in the *Mining Journal* for March, 1848; and as they are of the first importance, we trust inventors and patentees will press them upon the continuous attention of Government. The following are some of the recommendations of the committee. They state that—

The object for granting a patent for an invention is, not merely to secure to an inventor the fair reward of his labour and ingenuity, but also to benefit the public by encouraging such inventions, and it is essential that the Crown should have some tribunal to refer to for advice before making such grants. That it has not appeared to them that any better course can be devised than a reference to the ATTORNEY or SOLICITOR-GENERAL, to inquire into the merits of the circumstances set forth in the petition, and report thereon to the Crown. The inquiry would appear, for the most part, to involve considerations rather of a legal than of a scientific nature. But should questions arise on an opposed petition, where a more than ordinary familiarity with scientific subjects might seem requisite for the due comprehension of the matter under investigation, the ATTORNEY or SOLICITOR-GENERAL would always have the power, which they now possess and exercise, of calling in some man of practical science, unconnected with the parties before them, and unprejudiced in the matter in dispute, to aid them in coming to a just decision. Ample opportunity having been given for making opposition at this stage of the proceedings, no adequate advantage is derived from a second opposition at the Patent Bill Office, if it seems, however, that oppositions at that stage are of unfrequent occurrence.

If this opinion should be adopted, and the proceedings at the Patent Bill Office be dispensed with, they then recommend that some public notice, by advertisement in the *Gazette* or otherwise, should be given that a patent for a particular object has been applied for, not naming the applicant, or giving more than a very general description of the object of the invention; and that a sufficient number of days should be allowed from the date of the advertisement, before proceeding with the petition, in order that a fair opportunity for opposition may be afforded to parties desirous of opposing the grant sought for.

They also recommend *that an outline description*, such as is now required to *be deposited with the Attorney or Solicitor-General* in cases of opposed patents, should be required to be lodged, under seal, with every petition on its first presentation at the Home Office. It is not proposed that this outline description or specification should supersede the specification now required to be enrolled in Chancery, nor that it should be required to enter into the details of the invention; but that it should be considered binding as to the principles of it. With these provisos they think that *a patent when granted might take its date from the day on which the petition is presented*; instead of, as at present, from the day on which the patent is sealed.

They also recommend, that in lieu of requiring successive payments of fees and stamp duties at the several public offices, a stamp should be affixed to the Queen's Bill in the department in which it is prepared.

In the case of patents of appointment to office, the amount of this stamp might be a small per centage on the salary of the office.

In the case of patents for inventions, a stamp of uniform value, without reference to the number of names included in the grant, should suffice. Should it be determined to extend the power of granting patents under the Great Seal of the United Kingdom to Ireland and Scotland, they are disposed to recommend that, for a patent extending over the United Kingdom, the Channel Islands, and the colonies, a stamp of 50*l.* should be required. But, if it should be thought inexpedient to debar inventors from taking out patents for England alone, in that case it is recommended that a stamp of 30*l.* should be imposed on patents for England, with the Channel Islands and colonies; with an addition of 20*l.* for Scotland and Ireland, or of 10*l.* for either Scotland or Ireland separately.

They think such an arrangement would afford satisfaction to patentees, and would, at the same time, compensate the revenue for the loss which it would sustain by the adoption of the course they have recommended. They do not make any suggestions in regard to the proceedings before the LORD CHANCELLOR.

With respect to specifications and their emolument, they think it of great importance to a party applying to take out a patent for an invention to ascertain what patents in relation to the same object have been previously taken out; otherwise, after he has incurred considerable expense in perfecting his invention and obtaining a grant, some previous patent may be discovered which may vitiate his patent by destroying its originality.

For this, and other reasons, it would seem very desirable that specifications should be made more available to the public than they are at present. It has already been stated, that specifications have been hitherto enrolled in three different offices, searches in all of which must frequently be made before a party seeking to obtain a patent for a new invention can satisfy himself that no similar patent has at any time previously been granted; and from the absence of indices, or proper classification, these searches must always be attended with great uncertainty, and often with great expense; and the difficulties of such a search are enhanced by the specifications being copied on rolls in an engrossing hand. It is, therefore, recommended that these specifications should be entered in book-form in a common hand, and that *proper indices should be made of them.* They would then become valuable references for the public.

These suggested alterations would certainly be a great boon to inventors and patentees, as compared with the present working of the Patent Laws; and though we could desire a more sweeping reform with regard to fees, and some other points, we believe these changes, if properly carried out, would be of great public advantage.

THE CROWN PROPERTY IN NORTH WALES.

Public attention has of late been somewhat directed to the administration of the Crown lands by the Board of Woods and Forests; but we do not remember much discussion as to the proceedings of that body, with regard to property situated in North Wales. We have received communications from persons well acquainted with the locality, complaining of grevious malversation on the part of those who should have there acted as guardians of the public interests. The Crown property in the northern district of the principality is described as of the most valuable nature. It comprises the ancient forest of Snowdon, with several lordships, manors, and royalties. There are many unenfranchised moors, wastes, and commons of great extent; numerous rivers, streams, lakes, and much valuable shore ground, which are of right Crown property; but which have been jobbed away by the profligacy, or recklessness of successive administrations, to reward political adherence, or secure political partisans.

We should be glad that this subject should receive discussion at the hands of persons of competent information. It is evident that the property, if of the kind described, must deserve attention and surveillance. The moors, wastes, and commons, are said to abound with mines, minerals, and rocks of lime and slate. We copy from an account of this property:—"The rocks are capable of producing an inexhaustible supply of slates, hones, setts, flags, and lime. The whole country, in fact, abounds with, and is traversed by, mineral lodes, or veins; rocks of slate, lime, and building-stone of the very best quality—the value of which, as a permanent source of public revenue, no one can correctly estimate. * * * It may with certainty be stated that, with proper management, the Crown property in North Wales is capable of yielding an annual public revenue which, honestly applied, would appreciably diminish the amount of taxes which bear so heavily upon the industrious classes throughout the kingdom."

We must be pardoned the length of this extract for the importance of the subject. If the public are in reality owners of valuable property in mines and minerals in North Wales, we see no reason why they should not enter into immediate enjoyment of their estate. We do not recommend anything rash. We would nether throw ourselves into the arms of Mr. Dousterswivel, or of a Treasury jobber. All we say at present is, let us inquire how far the allegations of the self-constituted accusers of the commissioners are founded on fact. The case of the North Wales Crown property is very different from that of the Cornish Crown property, which was brought last session under the attention of the House by Mr. Trelawny. The Cornish case scarcely exceeded a charge of mismanagement; but in that of the North Wales estates, if the charge of the accusers be made out, it discloses a series of acts amounting almost to swindling.

It is said that, for the last 50 or 60 years, Crown property in Wales has been looked upon as a legitimate source of political corruption. We take the charges as we find them, when we state that, within that period, Crown property of enormous value in North Wales has been appropriated by private individuals, with the privity and connivance of Crown tenants, sheriffs of counties, lords of manors, stewards of lordships, bailiffs of hundreds, and Crown officers, who were *ex officio* guardians of the public rights. The sheriffs of the counties have been invariably landed proprietors—they have appointed as their deputies almost uniformly their own solicitors, who were likewise the acting law agents and country solicitors for the Woods and Forests. We do not, of course, mean to assert of our own knowledge that objectionable transactions actually took place in consequence of such arrangements as these; but the arrangements are very suspicious, and the charges are openly made. Here, again, in order to make the system clear, we must give another extract from the report before us:—

"But the evils of the system did not stop even at that point; for, up to a recent period, the auditing and receiving of the proceeds of Crown property throughout North Wales were intrusted to parties who were extensive landed proprietors, and whose local interests were directly adverse to the rights of the Crown. Under such arrangements, the whole property of the Crown, and its appendant rights, were, for more than half-a-century, derelict, and *de facto* at the mercy of those who might choose to appropriate it. Thus the Crown was not only deprived of annual revenues to a considerable amount, from waifs and from estrays that were yearly gathered and sold, but its title to property was in many instances rendered uncertain and questionable by the non-existence of enrolled accurate returns from sheriffs and Crown bailiffs, so that the Crown officers connected with the Woods and Forests, to judge from appearances, must in many instances have considered it expedient either to forego the enforcement of the rights of the Crown, or to compromise them, when of great value, by sale, demise, or otherwise, at a mere nominal consideration."

Under such a system of management as this, the corruption of superior led to the corruption of inferior officers, and the whole system of the management of Crown property in North Wales degenerated into a general scramble. The documents and records in the Exchequer at Carnarvon have been made away with, and all is at present confusion and obscurity. The report now before us abounds with instances in which the North Wales Crown property has been mismanaged. The case of the hundred of Uchaf, in the county of Carnarvon, is therein cited as the monster job of the district. We cannot pretend to follow the report through the various steps of this strange proceeding, which are, doubtless, familiar enough to all who are versed in the gossip of the country side, but enough is charged on the surface of the accusation to demand further inquiry. It appears that, by letters patent, bearing date August 2, 1784, and purporting to be made under the advice of Mr. Pitt, the hundred of Uchaf, in the county of Carnarvon, with all rights, &c., as also the office of bailiff, &c.; as also all royalties of hunting, fishing, hawking, &c.; as also mines of copper, lead, tin, &c.; as also minerals within the commons or waste grounds of two parishes named in the letters patent, were granted and demised to Lord Penrhyn, and his successors, at a nominal rent, "together with the further rent or sum of 15s. for every ton of lead ore; 8s. for every ton of calamine, and one-twelfth part in value of all copper, and of all other mines, and of all other mines and minerals raised and dug up, within the two parishes aforesaid."

Such are the terms of the letters patent; and, if we rightly apprehend, one main portion of the charge in this case, it is that the mining and quarrying operations permitted by the grant have been extensively and indefinitely spread over a wider surface, and that in particular one common has been taken in without any shadow of right, "which contains, and is traversed by, the most gigantic and valuable vein of slates that has ever yet been worked, or discovered, in any part of the world." The expenses of working the quarry in question were stated, at a meeting of the Bangor and Beaumaris Poor Law Guardians, to reach 78,000*l.* a year. Now, the general estimate is, that every 20s. expended in working the quarry will produce 45s. of slates. If this be so, we leave the public to decide upon the importance of the subject we are to-day bringing under their notice. Many other points, with reference to the hundred of Uchaf, are noticed. We only trust that our remarks of to-day may have the effect of eliciting accurate information upon the subject, and setting us right, if we have at all misapprehended the state of facts with regard to this slate quarry. It is stated that arrangements are in contemplation for renewing the lease, which now hangs upon a single life of 69 years. It is impossible for the Commissioners of Woods and Forests to take such a step without giving ample satisfaction to the public.

We have always looked upon a proper system of management of the Crown lands as one of the most tangible and genuine branches of financial reform. Nothing should be neglected to bring any instance of past or present malversation on the part of the commissioners before the public. Even with the best intentions, they need the stimulus of private interest, and, therefore, must be made to feel constantly that they are acting under the watchful eyes of thousands, who will be quick to detect, and eager to denounce, not only instances of wilful mismanagement, but even milder cases of supineness or neglect. Taking things at the best, the Crown property and forests have in years gone by, been infamously mismanaged and jobbed away; and it is time such a state of things should be brought to a termination.—*Times.*

CAMERON'S STEAM-COAL COMPANY.—We have for a length of time watched with regret the unfortunate position in which this company has been placed, and continually expected some decisive measures would be adopted to endeavour to place the shareholders on a better footing; but we must confess we were not prepared for the abrupt breaking up of the entire colliery workings, and the sale of the plant, stores, &c. Such, however, we fear, is now inevitable. Some of the more easily removed articles were disposed of on the 1st instant *for taxes*; but the general sale, also advertised to take place on that day, was indefinitely postponed, in consequence of an arrangement with a shareholder. The most remarkable part of the proceedings appears to be—and which evidences a desire to keep the proceedings in the dark—that although the sale was to have come off on the 1st of this month, no bills of particulars made their appearance at Swansea until the 30th July. We confess that there appears some underhand agency at work which it would be well for the shareholders to ferret out, before it be too late to save even the wreck of this, which might have been, with proper care, so lucrative a property.

NOVEL MODE OF RAILWAY PROPULSION.—A few days since we inspected a model of a locomotive carriage, to be propelled by the power obtained by a falling body acting on the periphery of a fly-wheel. In the centre of the carriage is a vertical fly-wheel placed in a lateral direction, and having four spokes at right angles with each other, in which are slots running throughout their length. On a side bar, level with the axis of the wheel, is a sliding tube, on which is fixed a lever oscillating on an axis, and on the opposite side is a similar arrangement. At the end of the lever is a weight, which would be regulated according to circumstances. Now the idea of the inventor, Mr. Thompson, of Melville-terrace, Caledonia-road, is this—Supposing the weight to be at the top, and falling through half the circumference of the wheel, it will, by a chain passing over drums on the axis of the fly and driving wheels, propel the carriage to a distance, according to the proportions between these wheels and drums; by this time the weight on the opposite side is in a like position to give an equal amount of power and distance of propulsion. To give the advantage to the falling weight, over that which has to be raised on the other side of the wheel, it is by means of the slot in the spokes, placed by a mechanical arrangement in such position that the leverage is two to one in favour of the former. Mr. Thompson does not expect that this apparatus can work by itself, but he proposes the employment of a very small steam-engine to overcome the dead points where the weight has to be raised in its most disadvantageous position, and thus become an auxiliary power in its descent. He has calculated that, with a wheel 13 feet in diameter, giving a leverage of 6½ feet, a weight of 1½ cwts. would, with the aid of very moderate steam power, propel a train at the usual rate of speed, and at a very great reduction in the cost.

THE PACIFIC STEAM-NAVIGATION COMPANY.—A magnificent iron steamship has been launched from the uppermost of Mr. Napier's building-yards at Govan. The launch was accomplished in beautiful style, and as she glided gracefully into the river she was christened the *Bolivia*, by Miss Dunn, of Greenhill. She has been built for the Pacific Steam-Navigation Company, and is intended to ply between Valparaiso and Panama. She is 200 feet in length, and 27 feet beam, and measures 773 tons burden. She is on the paddle-wheel principle, and will be propelled by side-lever engines of 300-horse power. There are some peculiarities in the construction of the *Bolivia* worth mentioning. There is a full poop 60 feet long, between the paddle-boxes there is a hurricane-deck, and in front a top-gallant forecastle. These three decks are seven feet six inches above the main-deck, and are connected together by gangways. Ample promenading room is thus afforded on the main-deck, sheltered from storms or oppressive heats. She was subsequently towed up to Mr. Robert Napier's wharf to receive her engines.—*North British Mail.*

THE LAKE HURON MINES AND THE CHIPPAWA INDIANS.

It has ever been boasted of England, that in its colonisation, and carrying civilisation into distant and savage lands, one great principle of justice governed all its proceedings—viz.: that of acknowledging the property of the land to be originally in the inhabitants, and to pay them for so much as they are dispossessed of. It would appear, that in the progress of the Canadians in mining on the banks of Lake Huron, this justice has been evaded. A petition has been forwarded to his Excellency the Earl of Elgin, the Governor-General of Canada, by the Chippawa Indians, and signed by eight of their chiefs, in which they complain bitterly of being driven from their lands, without the means of obtaining shelter or food. This document is written in the simple but allegorical and expressive language of the American Indians; it tells him, that when the whites first came among them, they were few and weak, while the Indians were in large numbers and powerful.

"When your white children first came into this country, they did not come shouting the war-cry, and seeking to wrest our lands from us. They told us that they came as friends, to smoke with us the pipe of peace; they sought our friendship; we became brothers; their enemies were ours. At that time we were strong and powerful, whilst they were few and weak. But did we oppose them, or wrong them? No! and they did not attempt to do what is now done, nor did they tell us that at some future day you would. Father, time wore on, and you have become a great people, whilst we have melted away like snow beneath an April sun. Our strength is wasted; our countless warriors dead; our forests laid low. You have hunted us from every place as with a wand; you have swept away all our pleasant land, and, like some giant foe, you tell us, willing or unwilling, 'you must go from 'mid these rocks and wastes, I want them now! I want them to make rich my white children, whilst you may shrink away to holes and caves, like starving dogs, to die.' Yes, father! your white children have opened our very graves, to tell the dead even they shall have no resting place."

They proceed to state that, three years ago, the miners first came among them, and occupied their lands, telling them they should be paid for them as soon as the value was ascertained.

This satisfied them for a time; but a year rolled on, and no treaty was made. Again they sent, and again no reply; and last autumn another appeal was made, but yet no arrangement. The Americans, on the opposite shores of the lake, treat them justly. Every year they behold the Redskins proceeding to La Pointe to receive the subsidy for the lands treated for; while the English plunder them of their lands, and drive the rightful owners away against their wishes; and instead of roving the forests in independence of famine, or want of any kind, as their forefathers did, wherever they now turn they behold wretchedness, poverty, and trouble. The petition concludes thus—"Father, You cannot despoil us of these lands; the warriors, with a strong hand and a brave heart, can never wrong a faithful friend and brother. These words we send live in the hearts of all our people; and they earnestly entreat you to call a council of our nation as speedily as possible, to enter into some treaty with us for our lands, so that no bad feelings shall exist between your red children and your white children." The governor made the following reply—"My Children,—Be assured that I regard with deep interest your welfare; and I cannot reflect but with feelings of admiration and esteem upon the faithful services performed by my red children, in rendering assistance and adding strength to the forces of my white children when engaged in war. The lands taken from you, of which you complain, were sold before I assumed the Government of this province. I will use every exertion in my power to the end that no injustice shall be done to you. In the meantime, let me advise you to return to your homes, leaving Mr. Macdonell, who is your friend, to attend to your matters here." We sincerely trust his Excellency is in earnest, and that this somewhat terse reply is not merely the unmeaning glossy verbiage of State policy. In too many cases, such as New Zealand, acts of gross injustice have been perpetrated, which have brought on the settlers the most fearful and revengeful reprisals. Let us imitate the upright conduct of Penn in the first foundation of the American colonies, and we shall bind the aborigines for ever to our interests.

THE ASTURIAN MINING COMPANY.

[FROM A CORRESPONDENT.]

For a long period the affairs of this company have been in a complete state of disorganisation—to recapitulate the causes which have led to this deplorable result would occupy so much time, and embrace such a variety of subjects, that it would be an Herculanean task to discuss the circumstances in their several bearings. Certainly few companies ever started under more favourable auspices, or gave at the formation a better hope for the profitable return of the money invested. In different parts of the province the company possessed mines of copper, lead, and quicksilver, while their coal and iron concessions were among the most abundant, and easily worked in the province. An efficient staff was selected, the concern had all the elements of success, and it appeared that it only required capital, judiciously applied, combined with skill and energy, to render it one of the securest and most profitable foreign investments in which British capital was embarked. A new market was to be formed for the sale of the iron and coal, and it was calculated that, at the time the company were enriching themselves, they would be conferring incalculable benefits on the country in which they were located. A heavy amount of capital (say 180,000*l.*) has been sunk, shares have depreciated considerably in value, and, as yet, no dividends have been declared, nor does there appear at present any likelihood of such ever being the case; indeed, it would appear from all accounts, that the shareholders may consider themselves fortunate if they can retire from the investment without additional loss. I am led to make these remarks from the publication of a Royal decree, dated Aranjuez, the 26th June, and countersigned by Senor Juan Bravo Murillo, Minister of Commerce, Instruction, and Public Works. In this it states, that Mr. G. Colquhoun, president of the directors of the Asturian Mining Company, and Mr. Josias Lambert, manager of the works at Mieres, have petitioned for the Royal permission to continue in operation these works. After alluding to the formation of the company in London on the 17th Sept., 1844, and the appointment of the directors, with a salary of 1050*l.* per annum, it states that a petition was presented by D. Ramon de Guardimono, and other Spanish shareholders, the 27th November last, in which they complain of the construction of the company; and, perceiving its ruinous state, suggest, as a means of reformation, that a portion of the administration should be transferred to the Spanish shareholders, and statutes and regulations adopted more certain and just than those which have hitherto been practised; that divers articles of the commercial code, the law of the 28th of January, 1848, and of the rules prescribed for their execution, together with the Royal decrees of the 8th May and 19th June, 1848, have been infringed; that the constitution of the company was in contravention to the pre-existing articles of the commercial code; that contrary to the 54th article of the bye-laws of the company, the books are kept in the English language, at the office in London, instead of being in Spanish, at Oviedo; that at the latter place the books are only kept which relate to the manipulation of the mines and foundries; that the consequence of this is, the balances shown there are defective, neither specifying the amount of goods purchased, or returns from those sold, nor the real value of the mines, works, and buildings of the company; that as they have infringed the several articles of the commercial code, relating to the inscribing of the deeds of the company in the public record office of the province, and in particular at the commercial tribunals, from which cause none of their acts have had any validity. Considering the bad organisation of the company, inasmuch as the general direction (Junta-General) at Oviedo is composed only of two persons whom, it must be remarked, are salaried by the company, the one as general manager, the other as director of the foundries—and that, as these individuals represented the interests of the direction in London, such a grave question as the continuation or the dissolution of the society might be carried without any regard to the protestations of other shareholders who were precluded from being parties to any deliberation on the subject. Considering the nullity of the acts of the company since their formation, and that *there exist no obstacles to prevent the construction of the company de novo*, with such statutes as will not be in contravention to the commercial code, and the ruinous state of the society, according to the balance struck in London, where a positive loss is shown of several millions of reals.

In consideration of the above circumstances, the royal authorization is *denied* to the Asturian Mining Company to continue their operations, they having failed in their institution to fulfil their own statutes or the regulations of the mercantile legislation. The document is of great length, and contains many minor charges against the direction of the company, the principal and the graver are, however, here recited. Comment on this ruinous determination, which the Spanish Government have arrived at, is unnecessary; any one acquainted with the character of that people may easily surmise, unless some powerful intervention is used, what will be the issue of the affair. Through want of knowledge of legal technicalities in a litigious country, British capital may be, to use the mildest expression, wrested from its original owners to enrich a set of rapacious foreigners.

By advices from Hamburg, we learn that, the blockade having terminated, the manufactories, iron foundries, and copper smelting works, are about to resume their wonted activity, and large shipments of coal, coke, fire-bricks, &c., may be daily expected. The blockade having prevented the Elbe Copper-Works receiving their supplies of ore from South America, it is apprehended there will be a deficiency for some considerable period. The proprietors are, therefore, desirous to purchase foreign ores, preferring those of higher per centage; the supposed good quality of their copper is said to arise from the circumstance of their not allowing any admixture of stubborn low ores, such as are produced from some of our Cornish mines.

AGRICULTURAL CHEMISTRY—ARTIFICIAL MANURE.

A few weeks since, Dr. Ryan, late lecturer at the Polytechnic Institution, delivered, in consequence of an invitation, a popular lecture before an agricultural body at Winchester, on artificial manuring, which lecture is now published; and, as the subject is one of vast importance in a national as well as merely agricultural view, we subjoin sufficient of it, in the shape of extracts, to render intelligible to our readers its principal details. In describing the beautiful connexion between the animal and vegetable kingdoms, and how fully dependent they are in turn on the mineral world, he says—"All soils are originally formed by the disintegration of rocks—generally of those above which they remain situated; but, in some instances, as in the case of alluvial lands, they have been transported, by the agency of floods, from a very considerable distance. The influence of air and of moisture, assisted by changes of temperature, upon the hardest and most stubborn rock, is wonderful. We have often noticed how the sharpness of the sculptured stones of our older churches has disappeared under the mere action of the driving wind and of the pelting rain; and, in the changes thus produced, we have a familiar illustration of one of Nature's operations for the formation and fertilization of a soil. It is not always, however, that a rock suffers the slow disintegration to which we have just referred. Other influences are at work; and change of temperature hastens the result. The rain, falling upon the surface of the rock, finds its way into its most secret clefts and crevices; there the cold breath of winter reaches it, and the water becomes ice; but, as it freezes, it also expands, and exerts a power which enables it to tear asunder the walls of its prison, and facilitate the necessary work of decomposition. Thus, from rocks are produced all the inorganic constituents of a soil. The organic portion consists of decayed and decaying animal and vegetable matter. There are some seeds which seem to have the power of germinating even upon the surface of a mere stone. Seeds of this description, either carried by the winds, or conveyed by birds, would soon vegetate on the bosom of a decomposing rock; the plants thus formed would eventually die, and their decaying bodies would supply the first organic materials. Generation after generation would succeed; birds and animals would resort there for food; and from them the land would derive all the distinctive characters which denote fertility. Soils and plants are always composed of the two sets of constituents, which are termed organic and inorganic. If we burn a plant, or portion of soil, a part will disappear, and there will be a considerable diminution of weight. That which is dissipated by the action of the fire is the organic portion; the ash is constituted of the inorganic materials. The organic constituents of plants and of soils never exceed four in number; but those which are inorganic are very numerous, varying, both in quantity and number, according to locality or species. Different plants require variously constituted soils; and one vegetable will seek for its support more inorganic elements than another, or will demand some of them in greater abundance."

The inorganic constituents of an average soil are silica and fine sand, alumina, oxides of iron, oxide of manganese, lime, magnesia, potash, soda, phosphoric acid, and chlorine. The turnip, in a crop of 20 tons, takes up and impoverishes the land of mineral or inorganic matter to the extent of 650 lbs.; a crop of 8 tons of potatoes 580 lbs.; 20 tons of cabbages 900 lbs., or one-half more than turnips; 25 bushels of wheat per acre, and weighing 60 lbs. per bushel, takes from the land 210 lbs. of inorganic matter—30 lbs. in the grain, and 110 lbs. in the straw; barley 213 lbs., from 40 bushels, of 53 lbs. each; 50 bushels of oats, weighing 42 lbs. per bushel, take 326 lbs.; 26 bushels of rye, weighing 54 lbs. per bushel, 200 lbs.; and 25 bushels of beans, weighing 2800 lbs., carry off of this inorganic matter 210 lbs. "It is very evident from these statements, that the removal of every crop is contributing to the gradual unfertilisation of the soil. Even if the crop were allowed to die, and decay in the place of its birth, the multiplication of the seed, and the drainage of the land's resources, by the increased family of plants, would eventually produce the same results as those following the removal of the crops; the land would become changed in its character, and sterile, to a certain extent. The natural rotation of crops, to which we have already referred, as occurring in native forests, is a curious illustration of this. On the Rhine, we are told, between Landau and Kaiserlautern, oak forests of great antiquity are gradually giving way to the beech; and in other places the beech is succumbing to the pine. When the land has borne one description of crops for a period, the existing trees begin to languish, and a new race makes its appearance. The soil becomes sterile, as far as the oak is concerned, but retains what is necessary for the beech; and after giving its food to that race of plants for years, it still holds that which will nourish the pine."

The author then proceeds to describe the several artificial manures for various crops, their chemical nature, and the quantity to be applied to make good to the soil what may have been extracted by a previous crop; and to the agriculturist this published lecture will prove a source of much information in the important process of regulating the chemical arrangement of his manures—a science which is slowly but surely making its way among that important class, and which will alone place him in a position to compete with rival producers in other countries, whose commodities the late changes in our commercial code have rendered free in our markets.

CALIFORNIA.—The *Liverpool Times* publishes the following copy of an original letter to a highly respectable firm in Liverpool:—

San Francisco, California, April 3.—I wrote to you last from Valparaiso, and shortly afterwards set sail for this place, where I have been ever since the 23d of January. On arrival here we found but little excitement, as we were one of the first arrivals after the news of the gold discoveries became known and generally believed in South America. The abundance of gold, and the facility of acquiring it, altogether surpasses all the reports that have gone abroad; the consequence is, that food, lodging, &c., is extremely scarce; and as for servants, there is not one to be had at any price. I luckily rented, in company with Edward Heatley and a Mr. Thorner, of Montreal, a house, and have entered with those gentlemen into business; and though we have had but little capital to begin with, we have done well, and been enabled to charter a 200-ton schooner cheap, in which Heatley has gone to Valparaiso, to bring a small cargo of provisions, which are very scarce here, and augment in value daily as passengers continue to flow in.

There are now 60 vessels in the bay, all deserted by their crews and captains; and two steamers, sent as packets here from the United States, are also deserted and lying idle. For a short voyage to the coast some few sailors can be had, and a vessel that sailed yesterday engaged all her's at $200 per month.

Houses are very scarce, and all the hills in the vicinity of this town are crowded with tents, and rich and poor are all their own servants and cooks.

When a vessel arrives, for a few days after her arrival, the passengers that come in her work at $1 to $2 an hour, but as soon as they get $100 together they set off for the mines. The mines are situated on the banks of the Sacramento and Spanistan rivers, about three days' sail from this side of the bay; the freight from here to there is $6 per cwt., and a small schooner of 30 tons was chartered yesterday by a company of miners for this three days' trip for $4500, and freights will increase according to the number of vessels that arrive. Lumber cannot be had at $600 per 1000 feet, though the country abounds with most splendid timber. If you, or Mr. Dickson's house, were to send three or four iron houses from England, you would make a splendid profit; a small wooden house, or rather box, 5 yards by 5½, was sold yesterday for $300, and, of course, prices now increase in proportion to the emigration. Manufactured goods are worth nothing at all—that is to say Manchester goods in bales or pieces, as it is impossible to find a tailor to make a pair of trousers.

Ready-made clothing has been imported in large quantities from Chili, and are at present dull of sale, but in a month or two hence they will bring good prices again. I have seen this morning a nest of gold found by an Indian, one piece weighing 72 ounce, two 40 and 52, and the rest small gold, altogether amounting to $10,000, dug out in the course of a few hours; this, however, is rare. What the gold digging population average, one with another, is not above two ounces per day, but this is sure. I should have liked to have written you a very long letter, but I have little or no time for writing, as you may well imagine. I rise at daylight, make up my bed, sweep out office and room, then go out and get water. At 6 o'clock I put on the kettle for breakfast, which is tea and cold ham, open the office at half past 8, and while my partner attends to sales, I do the custom-house work, and disembark goods consigned to us; I think myself lucky when I can get an Indian to help me to row the launch ashore at $2 per hour. Then with a wheelbarrow I wheel the goods to the store. Some delicate gentlemen who arrived by last steamer from the United States have been in an awful plight, unaccustomed to this sort of work, and money is of no avail, because the lower classes have as much money as they want.—Our firm is E. D. Heatly and Co. SAMUEL PRICE.

NEWS FROM THE DIGGINGS.—(Extract of a letter from Lima.)—"You will have seen by this time, that in spite of the glowing accounts from California, the actual receipts of gold have been by no means of a nature to cause any uneasiness as to the effect to be produced on the standard value of the precious metal; in fact, I believe that the amount to be expected from that quarter has been very much exaggerated, as many a poor fellow will find to his cost, when he is planted there without the means of getting away again. As it is, the market is already utterly swamped with every description of goods, which are being sold by public auction on the wharf, to pay duties and store-rent, and nothing but ultimate ruin can be looked for by those who have shipped extensively to that quarter. I am only apprehensive that they will be re-shipping quantities of goods from San Francisco and Lima for sale, which will overdo our markets, and knock prices even lower than they are."—The following is an extract from a letter received from Valparaiso by the last West Indian mail:—"You remark, in your letter, that I say nothing about California, although it forms a great subject of interest in England. I hardly know what opinion to give, or what information to communicate. In this place the yellow fever, or gold mania, as they call it, has perhaps raged more violently than in any other part of the world. The emigrations, expeditions, speculations, &c., have been numerous and large in amount; but in the returns there is no remarkable feature, although we have had extraordinary accounts of the immense profits realised, and the great fortunes made in a short time. The goods taken from this port to California on credit have not yet been paid for, although a period of eight months has elapsed. On the whole, I should say there is a good deal of gold; but it is not every man's luck to hit upon the right place to dig for it. Living is so expensive, the state of society so debased, the hardships so great, that I do not think any person doing pretty well in any other part of the world should run the risk of a California adventure."

IRON FROM NORTH AMERICA.—Our Liverpool correspondent communicates the fact of an importation into the port of Liverpool from North America of a novel character. Hitherto it has been the rule that iron has been imported into the north-western continent from England; but now the practice is in one instance reversed, and although the amount of ore received in the present instance is comparatively small, the event is not less interesting and suggestive. The importation consists of 150 tons of iron, wood manufactured, and which is described as being of a very superior quality. The mines whence the sample has been received are described as extensive, rich, and abundant in ore of a quality superior to that dug in North Staffordshire, and the parties interested are now engaged, or about to engage, in more minute experiments touching the qualities of the ore. For this purpose machinery is to be exported, and, it is said, that not only do the specimens received promise a special adaptation to conversion into steel, but that the product in a state of iron will compete powerfully, if not triumphantly, in the United States with that exported from this country. The sample, our correspondent states, is still on shipboard in the Mersey. We do not, of course, engage in the expectations mentioned; we mention the fact as one likely to interest an important branch of mining industry in this island.—*Times.*

IRISH PEAT.—A vessel arrived in the river from one of the Irish ports, has brought 17 casks of peat as a portion of her cargo!

Original Correspondence.

STEAM NAVIGATION IN THE RIVERS OF INDIA.

SIR,—I read with much pleasure your notice of Mr. Bourne's work on the *Navigation of the Indian Rivers*, in which he has detailed the great advantages which would be derived by suitable steam-vessels on those waters, and it is to me highly gratifying to find some attention being directed by this country towards so desirable an object as the improvement of the internal communication of our vast Indian territories. I know of no subject more interesting, nor could there be a more profitable speculation carried out than the establishment of a sufficient number of such vessels for carrying purposes, both merchandise and passengers. But there would be much to be done. We have not in England rivers whose banks have for ages been neglected, and their waters divided into numerous insignificant channels—where every flood causes further devastations in every part of the country through which the stream flows. Similar to the Danube, in Europe, of which I have had much experience, in India fresh channels are continually forming, and the *debris* deposited in other parts of the rivers in the shape of shoals, sand-banks, and quicksands, in places which frequently, previous to the flood, contained from 15 to 20 feet of water. These subjects are but little understood in England, from the absence of experience on similar rivers here; and Mr. Bourne appears to think that it is impossible to improve these streams by the concentration of the water into one channel; but formidable as these obstructions may appear, with your permission I shall endeavour to shew to your readers that they may be so far overcome, as no longer to prove obstacles to the navigation of rivers of this shoaling character, and this at a very trifling cost. Mr. Bourne's proposal, as I can attest, is no visionary scheme, nor is there anything new in constructing iron steam-boats of 200 tons burden, of 120 horse-power, drawing from 14 to 18 in. of water, going at the rate of 10 miles an hour against the stream, and 18 miles per hour with it.

In bringing this subject before the readers of your Journal, I must allude to the state of the Danube, which, previous to English engineering skill being brought into action, presented the same apparent insurmountable difficulties as the great rivers of India do at present. The first attempt to navigate the Danube by steam-boats was made by several French and German engineers, who built a steam-boat for the purpose, and a monstrous affair it was. When finished, so confident were its constructors of success, that it was not even tried in the river previous to making its starting trip. The parties at once solicited the Emperor, Francis I., to honour with his presence their first voyage to Pesth, and as there was plenty of water in the river at the time, the invitation was accepted. She was named the *Francis I.*, and with the emperor on board left Vienna; and having got into the middle of the stream proceeded, amid loud congratulations, passing towns and villages in its downward progress. On its arrival at Pesth the enthusiasm of the inhabitants knew no bounds; feasting was the order of the day; and on the emperor returning on board to proceed back to Vienna the anchors were raised, and the engines put in motion, but all endeavours to propel the boat against the stream proved fruitless; it carried the boat along with it in spite of every exertion, and his Majesty had to return to Vienna by land, through a country without roads, a distance of 180 miles, in the best manner he could. The only boats which navigated the river previous to the introduction of steam navigation, were clumsy flat-bottomed deal barges, which made but one voyage down stream, when they were broken up, and the crew returned on foot, probably from 300 to 500 miles; for new ones could be built cheaper than the old ones could be towed back again.

Since the introduction of steam-boats, this process has, in a great measure, been done away with; and merchandise is now transported in iron-boats towed up and down the river by the Danube Steam Navigation Company's towing-boats, which I shall hereafter describe. In 1830, a Mr. J. Pritchard, who had been a shipwright in Woolwich Dockyard, having made minute examination of the various depths of water, rapidity of the currents, sandbanks, shoals, and other obstructions, declared to Baron Putton, a wealthy banker in Vienna, that he could build a steam-boat which would overcome all these apparent difficulties. The worthy baron was so pleased with what he termed his English straightforwardness, that he immediately expressed his willingness to supply any capital which might be requisite to build the boat in question. Mr. Pritchard commenced and completed the boat—the engines having been manufactured by Boulton and Watt; and, on the day appointed for her first trial, thousands of people assembled on shore to witness the "Englishman's steam-boat," as it was termed, carried away by the stream. On the day, and at the appointed hour, with his friends on board, Pritchard brought his charge out of the little harbour of Floridsdorf, and, to the surprise of all present, ascended the rapids in gallant style. Enemies now became friends; and it was declared generally that, from her small draft of water and her power, she was fit for any part of the river. Having made a trip to Pesth and back to Vienna, to his perfect satisfaction, the Emperor honoured him with his presence on another voyage; and so satisfied was he, that he granted Pritchard a concession for the entire navigation of the Danube for 21 years; but, in consequence of unpleasant circumstances and difficulties which Andrews (an Englishman, who had accompanied him as interpreter), got him into, he left Austria in disgust; and Andrews contrived to sell the concession to the present company for several thousand pounds—being comparatively rich, while Pritchard is residing at Fiume in age and neglect. From 1835 to 1847, the trade increased in a ratio far too rapid to allow new boats to be built fast enough; and, since the latter year, it has even advanced in a still greater degree. The company have now a fleet of 29 steamers, varying from 80 to 140-horse power, besides 105 iron-boats for luggage, carrying 100 tons each, with a draught of 12 in. of water, each capable of taking two other slip boats in tow, besides its own freight.

The first attempts to navigate the Danube by steam was attended with great difficulty, in consequence of the numerous sandbanks, quicksands, and shoals; and these were continually shifting from one place to the other. Channels which, previous to a flood, had been navigable for steam-boats, drawing 8 to 10 ft. of water, after the water had fallen, were found to be entirely blocked up, and, in a great many instances, after the water had fallen, might be walked over.

In many instances the current would take a different direction, or else become so divided, that scarcely any one of the streams was found to contain water enough to float a vessel, drawing 12 inches of water, so that the steamers for several years, on this account, were continually getting aground; sometimes the water falling at the same time, before assistance could be obtained, the steamers have, on several occasions, been left high and dry on the sand banks, and have only been dragged into the water again by the aid of one or two other steamers, together with the united efforts of 30 or 40 oxen, which have been shipped in shore boats from one island to another for this purpose. The Austrian Government being applied to for assistance to improve the navigation of the Danube, the sum of 100,000 fl. (or 10,000*l.*) per annum was granted for this purpose; the Hungarian Diet also granted a small sum annually for the improvement of the river in Hungary, and operations were immediately commenced under Count Szechenyi, Minister of Public Works, and with this very small expenditure, in two or three years the river presented altogether a different aspect—the sand banks, shoals, &c., to a great extent ceased to exist. The works were carried out on the following economical principles:—The sandy districts were the first places where the operations commenced; the river in these districts branched out into numerous channels, and at each of these outer channels were placed from 15 to 20 men on either side of the river. Some portion of the men were employed in cutting and binding faggots, others were employed in stopping or damming up the numerous arms of the river, on the same principle which Mr. Brunel applied for protecting the *Great Britain* steam-ship, in Dundrum Bay; others were employed in wheeling earth in between the faggots, and in a very short time the water became, to a great extent, confined into one central channel, scouring out to a width and depth sufficient for all purposes of navigation besides, and was the means of rescuing thousands of acres of land from the ravages of the flood, at a cost of not 1s. per acre. By following up this system, in course of a few years, the river, to a great extent, became confined to one channel, the sand banks became less frequent, and, consequently, the obstructions to the navigator became less numerous.

The brushwood on the banks of the river was used for this purpose; and, by it being laid in the dams in its green state, it took root again under water, and in a few years the whole became one thick massive bank. The only difficulty attending this process, was an unwise economy on the part of the State, by which some of the dams were made too weak, and were washed away, which were obliged to be replaced by stronger ones.

Having brought this subject before the English public, I have no hesitation in saying, that if the same means are resorted to on the Indian rivers, that, in a very few years, the impossibility represented by Mr. Bourne will cease to exist, and the rivers be made navigable at a remunerative profit.

Certainly, if such people as the poor Hungarians can afford to spend sufficient per annum for regulating the rivers in that country, I consider that 100,000*l.* per annum might be spent by the Indian Government for the same object, leaving the navigation of the rivers to private enterprise; and with 100,000*l.* per annum, for a few years, thousands of acres of land would be rescued from the rivers; swamps, in a great measure, would cease to exist; the banks would be converted into healthy and fertile districts, giving employment to thousands in agricultural pursuits. At the commencement of the Hungarian revolution, the rivers Theiss, Drave, and Save, were about to be made navigable by the same means, and by the same indefatigable noble patriot—Count Szechenyi. This excellent nobleman is too well known in England to require any comment from me.

Fleet-street, Aug. 9. G. SHEPHERD, C.E.

[A coloured diagram lies at our office for inspection, showing the state of the Danube originally, and its appearance after the operations above described had been effected. The system, certainly, appears very simple, and perfectly applicable to the rivers in India.]

SUCCESSFUL CASE OF PIPING A FIERY PIT.

SIR,—On recently passing from the town of Workington to Harrington, by the public road, I was much struck by a brilliant flame of considerable magnitude, at the top of Jane Pit, the property of Henry Curwen, Esq.; and on reaching the place, and making an inspection, I found it to be carburetted hydrogen gas burning at the top of a large pipe, through which it ascended from the bottom of the mine, the shaft of which is 148 yards deep. My inquiries of the workmen resulted in the communication of information which, I think, will be interesting, as well to the scientific as the public generally; and, therefore, I solicit a space in your important Journal to communicate the particulars I obtained.

It appears that, about three weeks ago, a large blower of hydrogen was got at the rise of the colliery, which evolved from the fissure of a downcast dyke, and so adulterated the return air of the pit as to render it perfectly unsafe for the colliers to pursue their labour. Two ways only were open to secure the safety of the mine—the one by an attempt to dilute the gas by an increase of air, so as to render it inexplosive; or by piping it to the surface. It seems that this pit had been heretofore sufficiently ventilated, and in all respects had been perfectly secure in the working, and entirely exempt from accident, owing principally to an air furnace of great magnitude, which consumed 4 cwts. of coal per hour. After experimenting with a low-pressure steam jet of 2 in. diameter (there not being a high-pressure boiler at the pit), the volume of air was found to be considerably increased, but not sufficiently so as to render the pit safe for working. It was, therefore, resolved upon to conduct the gas to the surface; and having a quantity of old 8-inch water-pipes at the works, they were made use of in laying a range of 210 yards up to the rise, which, in perpendicular height, was equal to an ascent of 105 ft. The pipes were introduced through a brick dam, forming the segment of a circle, and only a few yards from the dyke. From the lower end of these pipes 50 yards of wood boxes then carried it to the bottom of the shaft, and then boxes, 4 inches square, formed the conductors up the shaft.

After having these arrangements completed, the gas was found not to descend more than 80 yards down the 8-inch pipes. A pair of large blacksmith's bellows were applied at the surface, by the introduction of a leather tube, secured to the under side of the bellows, enclosing the receiving valve, and the other end of the tube to the top of the boxes, which admirably answered the object, by effecting exhaustion so rapidly, that in 20 minutes the air expelled from the bellows fired at the Davy lamp, a precaution made use of. The leather tube was then removed, and the gase ignited, and is still burning with a brilliancy and volume, so as to illuminate the atmosphere in the surrounding district. Without the exhaustion of the pipes, or an increase in pressure, the gas would have remained stationary, and this is mentioned for the purpose of facilitating any similar experiments. The whole of these proceedings have been conducted and completed under the sole superintendence of Mr. Alvan Penrice, Mr. Curwen's colliery agent, whose efforts were supported by the devoted services of the workmen, who seconded him with a willingness and energy that cannot be too much appreciated. There is, perhaps, no proprietor in the kingdom more anxious than the owner of these mines to have his works conducted in safety to his dependents, and their security is with him, on all occasions, the first and paramount consideration. It is, therefore, gratifying that these proceedings have all been carried on without the slightest accident.—PETER PEARSON: *Workington, August* 9.

ON EXPLOSIONS IN COLLIERIES.

SIR,—Adverting to my letter upon this subject, which appeared in your Journal of the 28th July, I respectfully beg to call the attention of your readers to the motives therein expressed, by which I was influenced in giving it publicity, and I had hoped that some *really scientific* individuals would have pointed out in a proper spirit, and *free from interested motives*, the consistency, or otherwise, of my views. Such, however, has not been the case. On the contrary, an anonymous correspondent—a perfect genius, no doubt—although ashamed of his name, has thought proper to denounce not only my suggestions, but those of many others, as "absurd projects, indulged in by sanguine theorists for the accomplishment of a favourite crotchet," &c; thus establishing the *reward* of purely philanthropic motives to be *abuse*. I, therefore, consider this pedantic individual to be too contemptible for further remark, unless he can prove the fallacy of my suggestions, beyond his present absurd arguments.

I, therefore, again address myself to your *scientific* readers generally, and exhort them to bear in mind that the various committees of inquiry into these awful visitations, with a knowledge of the defective state of the present system of ventilation, and with a view to remedy the evil, have invariably courted and encouraged the public at large to devote their energies to this good cause, in the hope that some individual, perhaps like myself unacquanted with the minutia of mining matters, suggesting an improvement for the protection of the lives of their fellow creatures; consequently I, amongst others, regardless of expense, or risk of danger, visited some of the most fiery mines, to mature or to abandon my scheme, and, encouraged by the result, I published it for improvement. Sir Humphrey Davy did the same, and his visit will not soon be forgotten; others have been advised to this course, but if an assumed witty and anonymous criticism, overcharged with low abuse and devoid of reason, is to obtain publicity as a reward for their humane labours, it is not, I think, calculated to encourage them in their laudable exertions.

I still contend that the impurities in the atmosphere of a mine can be separated from the pure air to a very great extent, if not entirely, in the manner I proposed. That the current of air can be materially increased, its circulation more *equally* distributed, the *danger* of extreme lengths of air coursing *diminished*, the *necessity* of additional shafts *abated*, and a greater per centage of coal obtained. I may be calumniated by a few for my apparent presumption; but I am not to be shaken in my purpose by *such means*, in the absence of a trial.

In your Journal, of Saturday last, I observed a paragraph on the system of ventilation in the Wall's-End Colliery, by which it appears the total length of passages, or air channels, in this mine is 31 miles, and the air circulating in these passages is 174,758,400 cubic feet per day. By the kind permission of Mr. Clark, the viewer, &c., I passed about three hours in this mine, and can form some idea of the expense incurred by the sinking of so many shafts, for the purpose of guarding against danger, and which should serve as an example to others, whose collieries contain double that length of air-course, with *one shaft only*. The cost of ventilating this mine you say is 347*l.* per annum, but if you add interest at 4 per cent. upon the *minimum* cost of extra shafts—say, three *only*, at 20,000*l.* each, it would be increased to the extent of 2400*l.* per annum, still this did not deter the humane proprietors from adopting such a course *for safety*, and I am bound to contend, in the cause of humanity, that if *one per cent.* upon the *actual* outlay at Wall's-End for this worthy object would cover the expense of the fittings I propose, and I verily believe it would, those who have not yet sunk a second shaft, in justice to their workmen, as well as for their own interests, ought not to condemn my project, without first putting it to the test, especially as it can be tested without incurring the expense of the fittings entire.

In conclusion, I beg to remark that the 174,758,400 cubic feet of air per day circulating in this mine is obtained by means of *three* furnaces, which would average 58,252,800 cubic feet each. By Struvé's apparatus, or mine ventilator, it is said that 200,000 cubic feet of air can be discharged per minute, which would be 288,000,000 cubic feet per day, nearly equal to the effects of *five* of these furnaces; and, remember, this mine has *two* down-cast shafts, whilst many other mines have but one furnace and one shaft, divided so as to serve both purposes—viz.: down and up-cast; but if Struvé's apparatus were brought into requisition, in conjunction with the mode of constructing the internal arrangements I suggest, I believe its effects would be universally approved, as all noxious gases must be the first removed.—C. COLWELL: *Borough-road, Southwark, Aug.* 8.

N.B.—I offer no comment upon the schemes of others, and I think they would act far more honourably if they entertained similar notions.

PREVENTION OF SMOKE.

SIR,—I observe, in your Journal of Saturday last, two communications respecting my apparatus for furnaces erected at Messrs. Wilkins and Weatherly's (my licensees) Patent Wire Rope-Works, Wapping, as described by you in a previous Number; as also a notice to correspondents, all claiming my humble invention. The first is from Mr. Henry Dircks, who, it appears, purchased Mr. C. W. Williams's patent of 1842, and erected a great number of furnaces, in accordance with the specification of that gentleman's patent. Mr. Dircks accuses me of infringing this patent, but I beg to call his attention to a fact he well remembers—that I had practised this mode of preventing smoke years prior to the date of the patent he accuses me of infringing, and that I did, in the presence of witnesse point out to him a furnace on the same principle, erected at my works at Mill-wall, Poplar, and have also more than once informed him that I erected three furnaces on the same plan at Great Grimsby, in the year 1836—two for the New Zealand Flax Company, and one for the Patent Wire-Rope Company.

As regards Mr. Charles Wye Williams, I consider that the public are very much indebted to that gentleman for his scientific researches respecting the prevention of smoke; and had that gentleman been a practical engineer, in addition to his scientific knowledge, the smoke nuisance, much to the health and comfort of the community, would long before this period have been done away with.—ANDREW SMITH: *London, August* 9.

THE ROTARY ENGINE.

SIR,—I feel assured, by the liberality with which you afford the assistance of your columns to scientific inventions, that the same consideration will be given to one by a plain practical mechanic, as to the result of the lucubrations of more erudite correspondents. I shall, therefore, introduce to your notice, without further preface, the plan of a rotary-engine by a working mechanic, one Robert Scotthorn, which I presume to call *the* solution of the problem which one of our great men pronounced *impossible*, with as much justification as attaches to the dictum respecting the nullity of loss of power in the crank—an idea that has been rightly ridiculed by most practical engineers, with some other sayings of "the eminents." I firmly believe in the following assertions, and before an impartial tribunal, the merits may soon be tested. The engine, at a vast economy of construction, material, weight, and space, is applicable to every purpose as a motive-power, and admits the adoption of any system for generating steam. It is perfectly under command and *steam-tight*—can be worked at high or low pressure, and expansively; whilst the maximum power, according to the usual calculation, can *ad libitum* be doubled. It will stand every test proposed by the dogmatic opponents of the rotary principle, and on the question of friction, it can be demonstrated to a child, that all others are completely distanced in saving of power and repairs. The engines could be engaged for three years, or even five or ten, if necessary; and nothing but the want of means have precluded the adoption of this engineering desideratum, which is the only requisite for the perfection of railway and road locomotives, and for the general introduction of steam as an auxiliary in shipping. Having no connections to advance this invention, I can do no more than recommend it to the attention of your readers, in the hope that some enterprising parties may be found, who will aid my design to encourage the meritorious exertions of a working man. I subjoin the description (from the specification), converted into general terms with as much precision as possible:—

It consists of a metallic case, containing one cylindrical chamber, a segment at each side being as if cut off, to open into two lesser cylindrical abutment chambers, the axial line of all being in the same plane. The main shaft passes through stuffing boxes in the two end covers at the centre of the main chamber, and on it is set *centrically* a hollow cylinder, or drum, of considerably less diameter than the chamber, leaving a vacancy between it and the case, which we may call the steam compartment. The ends of the drum impinge against annular metallic packing in the covers, and from this drum projects what may be called the piston, into which also are fitted metallic packings, to form, with the inner surfaces of the main chamber and covers, a steam-tight joint. Two hollow abutments, set on spindles working in stuffing-boxes through the centres of the side chambers, fill them—so that, by an inner concave face, they complete the circumference of the main chamber during the passage of the piston over each abutment chamber. At one extremity of these supplemental arcs is a flat surface, in which there is a metallic packing, concave at its face, to bear against the drum, and form, when moved up to it, a steam-tight joint, and each abutment has also packing along the convex face and at the sides, to form steam-tight joints with the inner surfaces of the side chambers, between which and the abutment steam is allowed partial play, to diminish friction and keep the abutment to its bearings.

The main shaft is hollow from each extremity to near the centre, whence these apertures severally diverge by tubular passages to the surface of the drum, where they open into the steam compartment at either side of the piston, and one orifice serves for the induction and the other for the eduction ports. The piston having been put into motion, and passed over one of the abutments, the latter, by the operation of cams set on the main shaft, closes up to the drum, bears against it after the passage of the induction port, and forms a base of resistance to the steam entering into the chamber thus constituted by the surfaces of the drum, main cylinder, piston, and abutment. At the same moment the other abutment falls back to complete the circle for the piston at its own side, which being passed, the action of the two abutments is reversed, and so on successively. To produce this action of the abutments two cams of very different forms are affixed, one at either side of the main shaft externally. It is difficult to describe these without diagrams, and indeed the above description gives the idea of much greater complication than really exists. All that can be said in general terms is, that the cams act against friction wheels on four levers, one projecting from each extremity of the abutment spindles, and the eccentric motion of the cams is so calculated as to bring the abutments in turn to the required bearings, as described. The engine works expansively by a valve attached to the steam pipe, or as a condensing engine by means of pipes connected with the apertures of the main shaft. Again, the working may be varied where it is desired to have the shaft stationary, by making the cylinder itself revolve; or, both cylinder and shaft may at the same time revolve together, and act with double power; the opposite action of the cylinder being reversed by gearing, which it is unnecessary to suggest to those versed in mechanics; and thereby this united power is brought to bear directly on the machinery to be worked, and gives an efficient working force, quadruple that of crank engines.—AN ENGINEER. *August* 7.

IRISH PEAT—ITS COMMERCIAL APPLICATION.

SIR,—I have much pleasure in bearing testimony to the general correctness of the statement of the value of the products obtainable from Irish peat, as reported by Lord Ashley last week in the House of Commons. As the statement stands it is apt to mislead, for it would appear as if the soda were obtained from the peat, instead of, as it really is, by the admixture of soda with some of the products of destructive distillation, for obtaining the carbonate of ammonia. The gas and ashes are hardly capable of conversion into a money value in the locality where the manufacture is carried on. I also much doubt if the peat can be rendered at the furnace mouth at an average cost of less than 2s. 6d. per ton, instead of 1s. 8d. The following results were obtained by me from the Dartmoor peat, which is of inferior quality to the Irish, in the year 1846. The experiment was made on 20 tons. It will be seen from this statement, that although there may be some difference in the nature of the products, and also in their quantities, yet that their money value remarkably approximates each other. I have stated the products as from 100 tons used in the retorts, and 100 tons employed as fuel:—

Charcoal—33 tons	£33	0	0
Peatine—100 gallons	10	0	0
Common oil—50 gallons	2	10	0
Naphtha, or pyroxylic spirit—30 gallons	7	10	0
Acetic acid—168 gallons	16	8	0
Crude tar, or vegetable tallow—33 cwts. 14 lbs.	16	10	0
Sulphate of ammonia—7½ cwts.	5	12	6
Gas	8	0	0
Ashes	3	6	8 = £102 17 2

I have put down the gas and ashes in order to make the comparison easier. The charcoal has been used with great advantage as fuel in the manufacture of all sorts of edge tools. It has also been employed for converting iron into steel, for case-hardening iron, and, ground to a fine powder, for mixing with moulding sand by iron-founders. The fine oil, to which I had given the name of "peatine," was burnt in a camphine lamp at one of the council meetings of the Duchy of Cornwall, held at Somerset-house, about three years since, when Prince Albert was present. A box, containing specimens of all the products obtainable from peat prepared by myself was presented to his Royal Highness at the same time.

At that time the peatine had a strong pungent odour, which rendered it objectionable; but since then I have succeeded in depriving it of this odour, and it can now be used as well as the best camphine, without being liable to deterioration, like camphine, by keeping. It is a solvent of India-rubber and of gutta percha. The naphtha, or pyroxylic spirit, has been acknowledged to be of superior quality to any made from wood, and is a most powerful solvent of the gums used in the manufacture of varnishes.

The vegetable tallow, or crude tarry products, from which much paraffine fit for making candles may be obtained, answers well for lubricating rough machinery. There appears to be some misunderstanding on the part of Lord Ashley, respecting the properties of the subjacent soil. It by no means follows, as a necessary consequence, that because large

quantities of ammonia are obtainable from the peat, that the fertile properties of the subjacent soil should be attributable to the presence of abundance of ammonia. On the contrary, it is most probable that the soil contains but a mere trace of ammonia.

The O'Gorman Mahon has also compared the peat oil with spermaceti oil. No such comparison can hold good, for they are perfectly dissimilar in their properties. The latter is one of the most valuable lubricants for the fine parts of machinery; but none of the so-called peat oils can be used for such a purpose.—ROBERT OXLAND: *Plymouth, August* 3.

SIR,—Your correspondent, Mr. H. Seaman, in last week's Journal, cautions the public not to be led away by the statement made in the House of Commons as to the value of Irish peat. He admits the fact, as to the product, to be correctly set forth, but winds up by saying that, notwithstanding this, "somehow or other it was a failure." I hope your correspondent will favour the public with an explanation "why it was af ail ure."—ONE INTERESTED IN THE QUESTION: *Tonbridge-Wells, Aug.* 6.

COPPER SMELTING.

SIR,—From Mr. Prideaux's letter, in your columns of the 28th July, I find he quite misunderstands me; the experiments I alluded to, as having been made by Messrs. Faraday and Phillips, were not laboratory ones, but made at the copper works at Swansea, where, at the instance of Messrs. Vivian, of Hafod, a sum of not less than 8000*l.* was expended by the spirited proprietors in alteration of furnaces, and experiments on chemical agents, with a view to economise the cost of smelting, &c., but without any other beneficial results than a few alterations purely of a mechanical nature. One of these, I observe, has been claimed by a Mr. Low, but was patented by Mr. Sheffield, and purchased by the above company; it is the introducing a stream of cool air through holes in the sides of the oxidating furnaces.—T. J. H.: *Clapham, August* 9.

ON COPPER SMELTING.

We stated, in a note to the communication of Mr. Prideaux, in the *Mining Journal* of the 28th July last, that we should publish Mr. H. Vivian's paper on the processes adopted at the Hafod Copper Works, near Swansea; and having obtained a copy, we find it much too long to insert entire; we have, therefore, been obliged to considerably curtail it, but have endeavoured, in doing so, to retain all the practical descriptions, omitting only some of the remarks, which do not bear immediately upon the processes and the descriptions of the furnaces:

The copper ores smelted in the works in South Wales are, for the most part, raised in the mines of Cornwall and Devon. They consist chiefly of yellow copper ore, or copper pyrites, and the grey sulphuret of copper.—The average produce in copper may be stated at 8½ per cent. The ores are conveyed from Cornwall to Wales to be smelted, on account of the supply of fuel, as not only carrying the smaller quantity to the greater, the ore to the coal, but because the vessels load back coal for the use of the engines of the mines. The principal smelting-works are situated on the navigable rivers of Swansea and Neath. The processes in a copper-works are simple—they consist of alternate calcinations and fusions. By the former the volatile matter is expelled, and the metals previously combined with the copper oxidised—the general fusibility of the mass being thereby increased The calcination is, in fact, a preparatory process to the fusion, in which the metallic oxides and earthy matters, being rendered specifically lighter than the metals, float on the surface, and are skimmed off as slags.

The furnaces in which these operations are performed are reverberatory, and of the usual construction. The substance to be acted on is placed on the body of the furnace, or hearth, which is separated from the fire-place by a bridge of bricks about 2 ft. in thickness. The flame passes over this bridge, and reverberating along the roof of the furnace, produces the required temperature, and escapes with any volatile matter that may be disengaged from the ore, or metallic sulphurets, through a flue at the opposite extremity of the furnace, which flue communicates with a perpendicular stack, or chimney. These furnaces are of two descriptions, varying in their dimensions and internal form. The calcining furnaces, or calciners, are furnished with four doors, or openings—two on each side the furnace—for the convenience of stirring the ore, and drawing it out of the furnace when calcined. They vary in their dimensions, but are commonly from 17 to 19 ft. in length from the bridge to the flue, and from 14 to 16 in width; the fire-place, from 4½ to 5 ft. across by 3 ft. The melting furnaces are much smaller than the calciners, not exceeding 11 or 11½ feet in length by 7½ or 8 feet in the broadest part; the fire-place is larger in proportion to the body of the furnace than in the calciner—being usually from 3½ to 4 ft. across, and 3 or 3½ ft. wide, as a high temperature is required to bring the substances, with as little detail as possible, into fusion. These furnaces have only one door, which is in the front part of the furnace.

The processes are conducted in the following order:—1. The copper ore calcined.—2. Calcined ore melted.—3. Coarse sulphuret from process 2, calcined.—4. Calcined coarse metal melted.—5. Fine metal from process 4, calcined.—6. Calcined fine metal melted.—7. Copper from process 6, roasted.—8. Coarse or blistered copper, refined.

The first charge of ore to the calciners usually consists of 3 to 3½ tons. It is distributed equally over the bottom of the calciner, which is made of fire bricks or square tiles. The fire is then gradually increased; so that towards the end of the process, which lasts twelve hours, the heat is as great as the ore will bear without being fused or baked together. To prevent this taking place, and to assist the disengagement of the sulphur, the ore is frequently stirred during the operation, and fresh surfaces exposed. At the expiration of the twelve hours, the charge is drawn out through holes in the bottom of the calciner, of which there is one opposite to each door, and, falling under the arch of the furnace, remains there till it is sufficiently cool to be removed, when water is thrown over it to prevent the escape of the finer particles; it is then put into barrows, and wheeled to the proper depôts. In this state it is called calcined ore. If the process has been well conducted, the ore is black and powdery.

PROCESS II.—*The Melting of the Calcined Ore.*—The calcined ore is delivered, as in the raw state, to the workmen in boxes containing 1 cwt. each. The charge is deposited in the same manner in a bin placed on the top of the furnace, and from thence passed into the interior as required. When the charge is let down and spread over the bottom, the door of the furnace is put up and well luted. Some slags from the fusion of the coarse metal, or sulphuret, are added, not only on account of the copper they contain, but to assist the fusion of the ore, being chiefly composed of oxide of iron. These are thrown into the furnace through the front door.

After the furnace is charged, the fire is made up, and the main object of the smelter is to bring the substances into fusion; it is, therefore, in this respect different from the calcining process. When the ore is melted, the door of the furnace is taken down, and the liquid mass well stirred, so as to allow of the complete separation of the metallic particles from the slags or earthy matters, and to get the charge clear of the bottom of the furnace, which is made of sand, and soon becomes impregnated with metal. The furnace being ready—that is, the substances being in perfect fusion—the smelter takes an iron rabble, and skims off, through the front door, the sand or slags consisting of the earthy matters contained in the ore, and any metallic oxides that may have been formed which, being specifically lighter than the metals in the state of sulphuret, float on the surface. When the metal in the furnace is freed from slags, the smelter lets down a second charge of ore, and proceeds with it in the same manner as with the first; and this he repeats until the metal collected in the bottom of the furnace is as high as the furnace will admit of without flowing out at the door, which is usually after the third charge; he then opens a hole, called the tapping hole, in the side of the furnace, through which the metal flows into an adjoining pit filled with water. It thus becomes granulated, and collects in a pan at the bottom of the cistern, which is raised by means of a crane. It is then filled into barrows, and wheeled to the place appointed for its reception.

The most important point to be attended to in this process is to make a fluid good mixture of earths and metals—so that the copper which is combined with the sulphur, may, from its greater specific gravity, settle at the bottom, and yield clean slags. This object is effected chiefly by means of metallic oxides, the slags from Process 4, which are melted with the ore, being almost wholly black oxide of iron. When the ores are very stubborn or difficult to melt, a box of flour-spar is added to the charge; but it is not desirable to increase the bulk of matter in the furnace unless required.

PROCESS III.—*Calcination of the Coarse Metal, the Product of the First Fusion.*—This is conducted in precisely a similar manner to the calcining of the ore. The charge is nearly of the same weight; but as it is desirable to oxidise the iron, which is more readily effected in this process than in the ore calciners, where it is protected from the action of the air by the earthy matters with which it is combined, the charge remains 24 hours in the furnace, and during that time is repeatedly stirred and turned. The heat during the first six hours should be moderate, and from that time gradually increased to the end of the operation.

PROCESS IV.—*Melting of the Coarse Metal after it has undergone Calcination.*—This is performed in furnaces precisely similar in construction to those in which the ore is melted; and with the calcined metal are melted some slags from the last operations in the works which contain some oxide of copper, as likewise pieces of furnace bottoms impregnated with metal, the proportion of each varying according to the stock or to the quality of the calcined metal. The chemical effect which takes place is, that the oxide of copper in the slags becomes reduced by a portion of the sulphur which combines with the oxygen, and passes off as sulphurous acid gas, while the metal thus reduced enters into combination with the sulphuret. That there may be a sufficient quantity of sulphur in the furnace to promote these changes, it is sometimes necessary, when the calcined metal is in a forward state, to carry a small quantity of raw or uncalcined metal, so that a clean slag may be obtained.

The metal in the metal furnace, after the slag is skimmed off, is either tapped into water, as from the ore furnaces, or into sand beds, according to the mode of treatment it is to be subjected to in subsequent operations. In the granulated state, it is called fine metal; in the solid form, blue metal, from the colour of its surface. The former is practised when the metal is to be brought forward by calcination. Its produce in fine copper is about 60 per cent.

PROCESS V.—*Calcination of the Fine Metal.*—This is performed in the same manner as the calcination of the coarse metal.

PROCESS VI.—*Melting of the Calcined Fine Metal.*—This is performed in the same manner as the melting of the coarse metal; the resulting product is a coarse copper from 80 to 90 per cent. of pure metal.

PROCESS VII.—*Roasting.*—This is chiefly an oxidising process. It is performed in furnaces of the same description as the melting furnaces, although distinguished by the appelation of roasters. The pigs of coarse copper from the last process are filled into the furnace, and exposed to the action of the air, which draws through the furnace at a great heat; the temperature is gradually increased to the melting point, and the expulsion of the volatile substances that remained is thus completed, and the iron or other metals still combined with the copper are oxidised. The charge is from 25 to 30 cwts. The metel is fused towards the end of the operation, which is continued for 12 or 24 hours, according to the state of forwardness when filled into the furnace, and is tapped into sand beds. The pigs are covered with black blisters, and the copper in this state is known by the name of blistered copper. In the interior of the pigs, the metal has a porous honeycombed appearance, occasioned by the gas formed during the ebullition which takes place in the sand beds on tapping. It is in this state fit for the refinery—the copper being freed from nearly all the sulphur, iron, and other substances, with which it was combined.

PROCESS VIII.—*Refining or Toughening.*—The refining furnace is similar in construction to the melting furnaces, and differs only in the arrangement of the bottom, which is made of sand, and laid with an inclination to the front door instead of to one side, as is the case in those furnaces in which the metal is flowed out—the refined copper being taken out in ladles from a pool formed in the bottom near the front door. The pigs from the roasters are filled into the furnace through a large door in the side. The heat at first is moderate, so as to complete the roasting or oxidising process, should the copper not be quite fine. After the charge is run down, and there is a good heat on the furnace, the front door is taken down, and the slags skimmed off; an assay is then taken out by the refiner with a small ladle, and broken in the vice; and from the general appearance of the metal in and out of the furnace, the state of the fire, &c., he judges whether the toughening process may be proceeded with, and can form some opinion as to the quantity of poles and charcoal that will be required to render it malleable, or, as it is termed, to bring it to the proper pitch. The copper in this state is what is termed dry. It is brittle, is of a deep-red colour, inclining to purple, an open grain, and a crystalline structure. In the process of toughening, the surface of the metal in the furnace is first well covered with charcoal. A pole, commonly of birch, is then held in the liquid metal, which causes considerable ebullition, owing to the evolution of gaseous matter, and this operation of poling is continued, adding occasionally fresh charcoal; so that the surface of the metal may be kept covered until from the assays which the refiner from time to time takes, he perceives the grain, which gradually becomes finer, is perfectly closed, so as even to assume a silky polished appearance in the assays when half cut through and broken, and is become of a light-red colour. He then makes further trial of its malleability by taking out a small quantity in a ladle, and pouring it into an iron mould, and, when set, beating it out while hot on the anvil with a sledge. If it is soft under the hammer, and does not crack at the edges, he is satisfied of its malleability, or, as they term it, that it is in its proper place, and directs the men to lade it out, which they do in iron ladles, coated with clay, pouring it into pots, or moulds, of the size required by the manufacturer. The usual size of the cakes for common purposes is 12 in. wide by 18 in length.

The process of refining or toughening copper is a delicate operation, requiring great care and attention on the part of the refiner to keep the metal in the malleable state. Its surface should be kept covered with charcoal, otherwise it will go back between the rounds of lading, the cakes being allowed to cool in the pot, and others laded thereon. In this case, fresh poling must be had recourse to; over poling is to be guarded against, as the metal is rendered thereby even more brittle than when in the dry state. Its colour becomes a light yellowish red; its structure fibrous. When this is found to be the case, or, as they say, gone too far, the refiner directs the charcoal to be drawn off the surface of the metal, and thus, by taking down the side door, and exposing the copper to the action of the air, it is brought back to its proper pitch—that is, it again becomes malleable.

FREYBERG—ITS MINES AND SMELTING-WORKS.

BY M. GUSTAVE THOST, INGENIEUR DES MINES ET USINES ROYALES DE SAXE.

Freyberg, in Saxony, is one of the most celebrated mining towns in Germany. The practical branches of mining, the customs, manners, and even the legislation of the mines, is transmitted from father to son, in such a manner as to give to the profession a durable stability, which has continued from remote periods until the present day. The possession and the right of exploring the mines was formerly absolutely vested in the Crown. At a later period, the same rules were adopted with regard to the smelting-works; afterwards the mines were allowed to be worked by private individuals, although their administration was subjected to the Government control, which remains in force until the present day. The consequence of this legislation has had this good effect—that the mines have been preserved from rapacious and unfair explorations; many of them being of great antiquity, would have been long since exhausted and abandoned, if the proprietors had worked them solely with a view to present profit, instead of considering their ultimate development and durable existence. The disadvantages, however, are daily felt, not only in the number of officers employed to enforce these regulations, but likewise in the multiplicity of ordinances and laws which have been promulgated at different epochs. For a number of years the legislative body of Saxony have intended to ameliorate and reform those laws, but as yet have arrived at no practical result or definite determination, which has tended to keep the mining interest in a visible state of depression. Although the exploration of the mines is carried out according to the most practical and scientific methods, a due regard being paid to economy, the system, with its vexatious interference and regard to forms and trivialities, has many and great evils. Decisions which are determined in other countries by a body of directors are made in Saxony by a variety of councils, which are the Ministry of the Finance Department, the Ober-Berg-amt, the Superior College, the Council of the Smelting-Works, the College of Mines, who are again assisted by a corresponding number of officers, whose duty it is specially to direct and watch the manipulative departments in the mines and smelting-works. Among the officers are men possessing great abilities, who have studied the theory of mining and smelting in the celebrated academy of Freyberg, and have undergone a practical education in the works. It is scarcely necessary to mention the names of Werner, Charpentier, Von Herder, Plattner, Weisbach, Reich, and Breithaupt, who were all students at this academy. There are about 126 mines in the vicinity of the city. The veins traverse gneiss rocks, and are generally of quartz, calcareous fluor-spar, and sulphate of barytes; the metallic ores are argentiferous sulphuret of lead, red silver ore, argentiferous grey copper ore, zinc, and some other ores of copper and lead, with a small quantity of nickel and cobalt. The Himmelfürst is situated about two miles south-east of Freyberg. The elevation of the surface above the level of the sea is 1346 ft.; to the bottom of the mine about 300 ft. There are five veins in this mine; the principal vein (*teichflache*) is from 1 ft. 6 in. to 3 ft. in width; the others are from 6 to 12 in. wide. The direction of this vein is nearly north and south, and its underlay is west about 3 ft. per fm. The ores consist of sulphuret of lead, native silver, sulphuret of silver, and red silver; their produce is from 6 to 7 ozs. per quintal of 100 lbs., equal to 3¾ or 4½ parts in 1000 parts of ore, or from ⅜ to ½ per cent. The veinstone is quartz and pearl spar, and the ores are accompanied by blende, spathose iron, and arsenical pyrites. About 700 miners are employed, of whom 500 work underground. In some of the mines there are above 100 veins; nearly every mine has its own administration; in general they are divided into 128 shares (*kuxe*), which belong to private adventures. The levels in all the mines are constructed and kept in repair and order by the Government; the expense, of which each mine is bound to contribute to, is levied from a rate, fixed according to the quantity of silver contained in the ores raised. This varies from ¼ oz. in the quintal to 60 per cent. or more of silver; the average in general is from 1 to 3 ozs. in the quintal. The ores are delivered to the Government works, where they are partly smelted, and partly amalgamated. The smelting-works purchase them according to the contents, which are fixed by assay with the blow-pipe, founded on a system which has been proved to be invariably correct, and conducted with a mathematical exactitude. This improvement has principally been owing to M. Plattner, who has practically brought into use the importance of the blow-pipe—not merely as an instrument of chemical recreation, but a correct standard of assay. The blow-pipe, with its apparatus, forms a complete portable laboratory, and is a useful guide to both the smelter and miner. The different processes are the raw fusion (*fondre cru*), the fusion of the lead, the cupellation, the refining of the silver, and the reduction of the litharge. Not only in Freyberg, but in all the smelting-works of Germany, the preference is given to smelting lead and argentiferous ores in high furnaces; those at Freyberg are from 13 to 14 ft. high.

The raw fusion (*fondre cru*) is performed with a double purpose—first to concentrate the small quantity of silver disseminated in the mineral, which without this process would be useless, and to receive a substance of precipitation for the manipulation of the fusion of the lead. The minerals which are fused contain a quantity of different earthy matters, and the metallic ores are principally pyrites of iron, with ¼ to 1½ oz. of silver to the quintal, 2 to 4 per cent. of lead, and ⅛ per cent. of copper. It is necessary to pay particular attention, that in smelting the slag there is more single silicates, until the formation of the bisilicates. The matte contains principally sulphureous iron, with about 3 ozs. of silver to the quintal, 4 to 10 per cent of lead, and 1½ per cent of copper. Afterwards this matte is roasted in the open air, laid on a bed of wood. This burns with great facility, as it contains nothing but sulphureous metals. A roaster generally contains from 300 to 400 quintals of matte, and burns from four to eight weeks, until it goes out. About a third part is roasted, which lays at the bottom; that on the top is placed in another roaster, to undergo the same process. By this roasting a great quantity of the sulphur is volatilised, and some of the oxides are freed from the metal.

Recently the mines have produced such quantities of these ores, that another method has been hit upon to reduce the silver. For this purpose they have commenced smelting in reverberatory furnaces, as used in England for smelting copper ores. The matte is roasted and smelted a second time to concentrate the silver. It is expected that this method will produce favourable results; and it is intended to be adopted for the future in heating these ores.

The Fusion of the Lead.—For this it is necessary—first, to submit the ores containing lead and silver to a roasting in the reverberatory furnace to volatilise the sulphur; when about to be smelted, a third part of the mineral, a third part of the roasted matte, and a third of the scoria, is taken; from this slags, which are nearly single silicates, should be obtained; a portion of the oxidulated iron which is in the matte combines with the earthy minerals to form a siliceous slag; another part of the oxidulated iron is reduced by the process of smelting, and combines with the sulphur contained in the mineral and the matte, and forms sulphureous iron (*schwefeleisen*), so that another matter is obtained, consisting of sulphureous lead (*schwefelblei*), sulphureous copper (*schwefelkupfer*), and sulphureous silver (*schwefelsilber*), &c. At the bottom of the melted mass is the metallic lead with the metallic silver; on this is the matte recently formed, and above all the scoria; sometimes, but this depends on the quantity of the ores, a second matte is smelted, containing arsenical nickel, which has a different specific gravity to the ordinary matte, so that the separation of the mattes is not difficult. In the smelting in general some products of the lead obtained from cupellation are added.

By this process, two valuable products are obtained—lead in combination with silver, and the matte. This latter is treated several times, until these metals are extracted, and nothing remains but sulphur, iron, and copper. From this, by degrees, a matte of copper is formed, from which the pure copper is extracted. The separation of the silver from the lead is made by cupellation. The cupellation furnace has a fixed foundation, with a moveable cap, r elbow, of iron. The smelting-bed is made every time by powdered clay and lime. At the side of this furnace is the fire-furnace; the blast, which is propelled by two pair of bellows during the cupellation, should be placed in a rectangular direction towards the flame. Firstly, the impurities contained in the lead separate, and are evaporated by a chimney from the furnace. The blast gives its oxygen to the liquid lead, to form litharge (oxide of lead), and this process is continued until the silver appears; the fire is then extinguished; water is poured in the furnace to prevent the silver volatilising. As it is impossible, in a furnace of these dimensions, to obtain the silver entirely pure, it is necessary to refine it; for this purpose, they use small plates, in which a bed of the same formation is made, as in the operation described above. By means of the blast, charcoal, and a mantle of iron which surrounds the whole, the silver is made fluid; the mantle and the charcoal are then removed; wood is put in front of the blast to cause a direct flame. From time to time, an assay is taken with an iron bar, and the silver is pure if the little assay, in cooling on the bar of iron, throws out different prismatic colours, which appear to resemble the refraction of the rays of light. In one of these plates about 25 lbs. of silver is refined. The production of this smelting, and that of the amalgamation-works, is annually about 70,000 to 80,000 marks of silver, of the value of about 140,000*l.* sterling. The production of lead is about 30,000 quintals, of the value of about 20,000*l.* sterling.

The reduction of the litharge is performed in one of the high furnaces, but not with coke, which is generally used; charcoal is the fuel employed, as the cokes are not sufficiently good and pure. This process is very simple, as it is only to burn the oxygen of the litharge with vivid charcoal until nothing but the metallic lead remains. The other system of extraction is conducted with mercury, in the amalgamation-works. The metals freed from lead are submitted to this process. They are mixed with chloride of natron (*chlornatrium*). Afterwards they are calcined. It is necessary to pay particular attention to this, in order to volatilise as much as possible the foreign substances, such as sulphur, zinc, arsenic, &c.—a combination of silver is formed with the chloride. The natron combines with the sulphur, and forms a sulphurous natron. The amalgamation is so conducted that the balles which are formed in the heat can be prepared, if necessary, for another calcination. The powder itself is ground in mills, and put in barrels; water, metallic iron, and mercury are added; these barrels are turned or rolled for about 12 hours; a current of galvanism is excited by this movement, which causes the chloride to leave the silver, which enters into combination with the mercury, while the chloride unites with the iron and forms chloride of iron. At the bottom of the barrels the amalgamation, or combination, of silver and mercury is found. A portion of the mercury, which is not chemically combined with the silver, and which forms with the mercury a crystallisation, with the crystals of the silver, is placed in an iron retort, well closed, having only one aperture, with a tuyère, which is conducted into a receptacle of cold water; the fire is made round the retort, so that the amalgamation becomes red hot; the mercury being easily volatilised escapes by the tuyère into the water, there it forms vapours, which are condensed to metal. The residue in the retort is the refined silver; the silver obtained by the process of amalgamation always contains copper; it is impossible to avoid this. This is not of much importance, as, in all the silver which is coined, it is necessary to add an alloy of copper to the pure metal.

FRANKLIN COXWORTHY'S DISCOVERIES IN NATURAL PHILOSOPHY.—No. II.

Having introduced the discoverer to our readers in the preceding Number, we have now to notice the two first steps taken by him, in subversion of previously existing opinions. And not more as matter of reference, than at once to elucidate the difference, we place the respective conclusions in juxta position.

Old Doctrines.	*New Doctrines.*
1. That vapour is both formed and decomposed during putrefaction.	1. That vapour is both formed and decomposed under the influence of high electrical conditions; but not during rot or putrefaction, carbon having then a greater affinity for oxygen than has hydrogen.
2. That snow and rain are nothing but congealed and condensed vapour, the ammonia of rain and snow water being acquired from the atmosphere, clouds being also nothing but vapour.	2. That snow is the original form of rain, is a quadruple compound, and during its decrystallisation yields water, ammonia, and carbon, which carbon constitutes the black cloud, and by vegetating is transformed into the white cloud.

Entering the chemical class of the Mechanics' Institute with a mind in some degree accustomed to inductive reasoning, and, at the same time repugnant to the carelessness of "taking for granted" whatever conclusions even his teachers might have arrived at, Franklin Coxworthy literally "began with the beginning" of his new study; and, so simple appeared to him the principles of chemistry, that in a few weeks he so far mastered them as to be able to assist his class as a lecturer, according to the system of mutual instruction. He was then rapidly led to dissent from many of the received and otherwise undisputed opinions of that period; the first that especially engaged his attention, being no less than the principles assumed to govern the decomposition of organic matter. He was taught to believe by the chemical authors of the day—Thenard, Henry, Ure, and others—that vapour was both formed and decomposed during the putrefaction of nitrogenous and the decay of vegetable matter; but as it appeared to him that the same principle which caused the combination of the elements constituting vapour, could not be safely assumed to effect their separation, he determined to appeal to experiment for a practical decision. Here, however, a difficulty presented itself—the want of pecuniary means, such as must still trammel his efforts in some degree. The chemical class did not possess appliances for the necessary investigation; and any arguments he could muster to induce the co-operation of the students in a crusade of this nature against the constituted authorities, proved unavailing. And he was thus thrown upon the limited resources which his salary of 90*l.* a-year, as a clerk in the Ordnance Office afforded, beyond his subsistence, and the appearance he had to maintain as a Government *employé*.

It would be out of place for us to dwell, at this time, on the obstacles he had to contend with, in conducting the numerous experiments which it became requisite for him to perform in elucidation of so important a question. Suffice it to say, that the necessarily protracted labour of years—protracted through the want of those indispensable adjuncts, time and money—at length fully satisfied him, that during putrefaction and decay, vapour was neither formed nor decomposed. Had, however, his examination ended there, the labour would have been but ill requited. In the course of his experiments, he elicited the far more important fact, that during nitrogenous putrefaction atmospheric air is decomposed, but not during the decay of vegetable substances or non-nitrogenous matter; for the latter, when subjected to the action of pure oxygen, such as is evolved by plants, and which, having a greater specific gravity than air, falls to the ground, had the whole of its hydrogen evolved as a light carburet—the fire-damp of coal mines. And here commences inquiries which have terminated in results most interesting to science, and of corresponding consequence to the great human family of this ever-teeming world. How, then, is this gas—the light carburetted hydrogen—restored to the vegetable kingdom? So the reader may now ask, as Franklin Coxworthy put the question to himself, when, being neither able to answer it of his own knowledge, nor to obtain a solution from any one else, he felt obliged, to use his own words, to "shut up shop," and trust to time and reflection to unravel the mystery. And Time, the ripener, and Reflection, the reaper, helped him to garner the harvest of the seed he had sown.

Returning homeward, one morning, from one of those walks before breakfast which invigorate the body and fructify the mind, he happened to turn round at the entrance of his humble domicile, and take "a glance at the morning." It was a morning, too, in the month of May—the month of bright imaginings for the philosopher as well as the poet—when, the sun being well above a metropolitan horizon, Franklin Coxworthy observed in the west a magnificent *white* cloud, majestically proceeding towards the north at the rate, apparently, of about two miles per hour; whilst, over the surface of that cloud, there was passing, at the rate of seemingly six or seven miles per hour, another, very densely *black*. This black cloud, then, he reasoned cannot be vapour, since it is black by reflected light; and in that cloud he consequently and at once detected the carbon of the carburetted hydrogen! But, then, how came it there? Reasoning on the properties of the galvanic battery, *which decomposes vapour*, he came to the inevitable conclusion that there must be in nature some similar property, or how else could that apparatus possess it? The utmost that man can do, is partially to call into action the pre-existing principles of nature. He can only produce in mimic miniature the wonderful phenomena of the physical world. His highest efforts can but dimly illustrate the vast profundity of the mighty universe. And, following up his inductive reasoning, further reflection led Franklin Coxworthy's attention to the nitrogen evolved from the atmosphere during combustion and respiration; and, finally, he remembered, as the most conclusive corroboration of his discovery, that snow is deposited in altitudes far above the point of eternal frost in the atmosphere, and cannot, therefore, be congealed vapour, as we are informed by metereologists.

He had, then, traced to the upper regions, the gases of—

Vapour ..... { Oxygen ..... } Water.
{ Hydrogen ..... }

Carburetted hydrogen { Carbon ..... Carbon.
{ Hydrogen ..... } Ammonia.
{ Nitrogen ..... }

or together a compound, being snow, which, on its decrystallisation, yields water, ammonia, and carbon, which constitutes *black* clouds, and, by vegetating the *white* clouds, and those of intermediate colours.—In our next we shall carry this question a stage or two further.—S.: *Cheltenham Journal.*

ACCIDENT AT A TELEGRAPH OFFICE.—As the youth employed in the telegraph office at Ely was in the act of working the telegraph, in reply to a communication during the recent thunder storm, he was knocked down by the force of the electric fluid acting upon the wires, but fortunately without receiving any injury beyond the momentary shock. The wires from the office communicating with the main wires were severed and the business of the office suspended for some hours.

New Patents.

SPECIFICATIONS ENROLLED DURING THE PAST WEEK.

Specification of patent granted to Edmund George Pinchbeck, Fleet-street London, for improvements in certain parts of steam-engines. The object of this invention is to accomplish the working of an air-pump or pumps, without having recourse to a separate crank or cranked shaft, introduced for that purpose, as is generally the case, in direct acting and oscillating steam-engines, and may be described in reference to one engine as follows:—The reciprocating motion acquired by the air-pump is to be communicated by a connecting rod and beam, or by a simple connecting rod, from a revolving point situated between the centre of the crank-pin and the centre of the main shaft, and on a plane parallel to the face of the crank nearest the crank-pin, and between the same and the collar of the bearing on the main or paddle-shaft immediately behind. The requisite rotary motion is thus obtained, without having recourse to any independent crank, cam, excentric, or modification of the crank-pin, and without fixing any additional piece whatever on the main shaft or shafts for that purpose; being effected by taking advantage of the existing crank of the engine, and slightly altering it in form merely, without in the slightest degree interfering with the ordinary function of the crank. In the case of direct acting or oscillating engines of a larger size (and to this class these improvements more particularly refer), it is considered that the getting in of the centre cranked shaft is a desirable object to effect, as the difficulty and expense of forging and fitting up so large a piece is very great, not to mention the further objection, arising from its liability to unsoundness; besides which, the bringing of the two cylinders nearer to each other will be attended with a saving of space in the vessel, and a greater compactness in the construction of the engines.

Claims.—1. The making of cranks with an intermediate pin, as shown and described.—2. The various applications of the same, as exemplified and described.

Specification of patent granted to John Taylor, of Parliament-street, Westminster, architect, for an improved mode of constructing and facing walls. This improved mode of facing walls consists of making the facing bricks, plates, or blocks (which are represented as being thinner than a brick, and of sufficient size to cover the depth of three courses) with a projecting piece on the back, and flush with its upper edge. This projection is of the same thickness as a brick. When the facing is put upon the wall, the projection is put into a rebate, formed by keeping back one of the courses of brick; by this arrangement the facing plates do not bear on each other, but are supported by the wall.

Claims.—The arrangements described for facing walls, so that the blocks forming the facing may not be made to support each other.

Specification of patent granted to James Webster, of Basford, Nottingham, engineer, for certain improvements in apparatus for manufacturing gas. The improved apparatus consists—first, of a hollow vessel which is heated in a furnace, into which naphtha is slowly allowed to flow; the gas generated from the naphtha passes up through a bed of coke; it is then brought into contact with a surface of melted resin, which is allowed to fall upon heated bars of metal; the gas is from thence conveyed through another layer of coke or iron, and by bent pipes passes through condensing vessels, by which the naphtha brought over along with the gas is separated from it; the gas is then fit for use, and the collected naphtha may be used for making the gas.—No claims.

Specification of patent granted to William Willcocks Sleigh, of Stamford Brook House, Chiswick, Middlesex, doctor of medicine, for a means for preventing injuries to persons and property from the sudden stoppage of railway carriages. The "means" specified consist of the application of a rule or toggle-joint to force the break up against the wheels. The toggle-joint is placed between the two wheels of the carriage, and when acted upon by a lever placed near to the guard, it causes the breaks to rub against the wheels. Another arrangement, nearly similar, is shown, by which the toggle-joint is made to act upon pieces taking hold of the rail.

Claim.—The application of the arrangement for acting either upon the wheels or upon the rails, for the purpose of stopping railway trains.

Specification of patent granted to John Brown, late of Bond-street, but now of Great Portland-street, Middlesex, engineer, for improvements in constructing and rigging vessels, and improvements in atmospheric and other railways. The improvement in "constructing and rigging vessels," consists of mounting the sails of vessels upon frames, and connecting these frames to a wheel, by which the whole set of sails upon a vessel, supposing her to have six masts, would be moved at the same instant. The improvement in "atmospheric railways" consist in the construction of an atmospheric valve, the peculiar feature of which is, that it is kept down to its seat by means of springs. The improvement in "other railways" consist—1. In laying down a few planks upon the ground, to which there is to be attached a rail of very slight construction; and—2. In effecting the transit by means of balloons, which are to convey the goods and passengers. The balloon is to be attached by the car to a locomotive placed upon the rail.—No claims.

Specification of patent granted to Henry Headly Parish, Esq., Eaton-place, Middlesex, for improvements in safety and other lamps, and in gas burners. Mr. Parish's safety-lamp has a cone of wire gauze round the burner, through which the air is admitted to the flame, having previously entered by a perforated cylinder. The flame is surrounded by a cylinder of glass for transmitting the light, and also provided with a glass chimney. The wire gauze is silvered by the electrotype process, which causes it to reflect the light, and imparts to it besides greater strength. The patentee claims the whole of the lamp as being new, except the reservoir for the oil. The gas burner specified is of the Argand form; in the central opening there are placed two wire gauze cones, one above and the other below the level of the point of escape for the gas. A better mixing of the air with the gas is stated to be thus effected, and the arrangement is claimed as being new.

LIST OF PATENTS GRANTED DURING THE PAST WEEK.

W. Thomas, Chespside, merchant, and J. Marsh, foreman to the said W. Thomas, for improvements in the manufacture of looped fabrics, stays, and other parts of dress; also in apparatus for measuring.

A. H. Holdsworth, Esq., of the Beacon, Dartmouth, for improvements in the construction of marine boilers, and funnels of steam-boats and vessels.

W. Furness, Lawton-street, Liverpool, builder, for improvements in machinery for ...ting, tenoning, planing, moulding, dovetailing, boring, mortising, tongueing, grooving, and sawing wood; also for sharpening and grinding tools or surfaces, and also in welding steel to cast-iron.

J. Knowlys, Esq., of Heysham Tower, near Lancaster, for improvements in the application and combination of mineral and vegetable products, also in obtaining products from mineral and vegetable substances, and in the generation and application of heat.

A. V. Newton, Chancery-lane, for improvements in derricks for raising heavy bodies (Being a communication).

DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

R. F. Miller, Hammersmith, omnibus.

M. and S. Butcher, Bristol, self-acting laths of iron to metallic bedsteads, sofas, &c.

S. Smith, Willenhall, lock.

S. Denison, Leeds, machine for stretching woven fabrics.

J. Roe, West Bromwich, horseshoe.

J. Walker, Shoe-lane, builder, effluvia trap for sewers and water-closets.

T. J. Tasker, Great Dover-street, Borough, resilient shirt-collar fastener.

J. Roberts, Eastcheap, strawberry tile.

T. Waller, Hoxton, fire-lamp stove.

T. Lawrence, Ludgate-hill, ladies' belt, with elastic ligature attached, adapted for other purposes.—*Mechanics' Magazine.*

Recipes.

[*Continued from the Mining Journal of August* 4.]

ARTIFICIAL YEAST.—No. 1: Mix wheat flour into a thick paste with water; keep it slightly covered in a moderately warm place—in about three days it begins to emit a little gas, and to exhale a disagreeable sour odour. After two or three days more the smell changes, and is accompanied by a distinct vinous odour; it is now in a state for exciting vinous fermentation.

No. 2: Honey, 5 ozs.; cream of tartar, 1 oz.; malt, 16 ozs.; water at 122° Fahr. Stir the whole well together, and allow it to rest for two or three hours, or until the temperature sinks to 65° Fahr., at which it must be kept covered over until fermentation takes place, and yeast is formed.

No. 3: Boil 4 ozs. of bean flour in 6 quarts of water for half an hour—mix the decoction with 3½ lbs. of wheat flour; when the temperature is at 55° Fahr., add 2 quarts of beer yeast—mix them well together, and keep the mixture at the above temperature until it ferments. When fermentation has continued for 24 hours, add 7 lbs. of barley, or bean flour—make it into a uniform dough by kneading; roll it out as thin as a dollar, and cut it with the top of a wine glass into small cakes, which are to be placed on a sieve, and dried in the sun. These may be kept in a dry place, and used as required. When required for use, mix one of the cakes with warm water, and set in a warm place for 12 hours, when it may be used as yeast.—*Patent Journal.*

THE ISLAY ESTATES.—In the last number of the *Mining Journal* we noticed the formation, by the merchants and bankers of Scotland, of a Tontine for the purchase of the estates of the Island of Islay, off the west coast of Scotland. The sale of these estates took place in Edinburgh, on Wednesday last, when they were sold to the association at the upset price of 530,000*l.* The Royal and National Banks of Scotland are the principal promoters of the scheme.

COAL MARKET, LONDON.

PRICE OF COALS PER TON AT THE CLOSE OF THE MARKET.

MONDAY.—Buddle's West Hartley 15—Carr's Hartley 15—East Adair's Main 12 9—Hastings Hartley 15—Holywell Main 15—New Tanfield 12 6—North Percy Hartley 15—Ord's Redheugh 13 6—Ravensworth West Hartley 14—Tanfield Moor 13—Tanfield Moor Bute's 12 6—Walker's Primrose 12 9—West Wylam 14 3—Wall's-End Brown's 14 6—Bensham 14 9—Bewicke and Co. 16—Gosforth 15 6—Gibson 15—Hilda 15 3—Heaton 15 6—Killingworth 15 6—Washington 15—Walker 15 3—Wharncliffe 15 6—Eden Main 16 6—Bell 16—Belmont 16 6—Braddyll 17—Heaton 17 3—Hutton 16—Lambton 17—Morrison 15 6—Russell's Hetton 17—Stewart's 17 3 to 17 6—Whitwell 15 9—Caradoc 16 6—Kelloe 16 9—South Hartlepool 16 3—Thornley 16 6—West Hetton 16—Adelaide Tees 16 6—Clavering Tees 14 6—Cowndon Tees 15 3—Denison 15—South Durham 15 9—Tees 17 3—Cowpen Hartley 15—Hartley 14 6.—Ships, 141; sold, 91.

WEDNESDAY.—Buddle's West Hartley 15—Chester Main 14 3—Hastings Hartley 15—Holywell Main 15—North Percy Hartley 15—Old Tanfield 12 6—Tanfield Moor 13—Tanfield Moor Butes 12 6—Townley 14—West Wylam 14 3—Wall's-End Brown's 14 6—Bensham 14 6—Northumberland 15—Walker 15 3—Eden Main 16 9—Bell 16 6—Belmont 16 9—Hetton 17 6—Haswell 17 9—Lumley 16—Morrison 15 6—Caradoc 16 9—Howden 15 6—Heugh Hall 16—Heselden 15 9—Kelloe 16 9—West Hetton 16—Adelaide Tees 16 6—Clavering Tees 14 6—Denison 15 3—Pease's West 13 6—Seymour Tees 16—Tees 17 6—Derwentwater Hartley 15—Hartley 14 6.—Ships at market, 62; sold, 44.

FRIDAY.—Buddle's West Hartley 15—North Percy Hartley 14 9—Original Tanfield 12—Tanfield Moor 13—Wall's-End Brown's 14 6—Percy 15 3—Walker 15 3—Wharncliffe 15 9—Bell 16 3—Braddyll 17 6—Haswell 17 9—Lumley 16—Morrison 15 6—Thornley 16 6—West Belmont 16 6—West Hetton 16—Clavering Tees 14 6—West Pease 13 6—Richardsod's Tees 14 9—Tees 17 6—West Cornforth 15 6.—Ships at market, 30; sold, 26; unsold, 4.

STEAM TO INDIA AND CHINA, VIA EGYPT.—Regular MONTHLY MAIL (steam conveyance) for PASSENGERS and LIGHT GOODS to CEYLON, MADRAS, CALCUTTA, PENANG, SINGAPORE, and HONG-KONG.

THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY 38

BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE PORTS by their steamers—starting from Southampton on the 20th of every month; and from Suez on or about the 10th of the month.

BOMBAY.—Passengers for Bombay can proceed by this company's steamers of the 29th of the month, to Malta, thence to Alexandria by her Majesty's steamers, and from Suez by the Honourable East India Company's steamers.

MEDITERRANEAN.—MALTA—On the 20th and 29th of every month. CONSTANTINOPLE—On the 29th of the month. ALEXANDRIA—On the 20th of the month.

SPAIN AND PORTUGAL.—Vigo, Oporto, Lisbon, Cadiz, and Gibraltar, on the 7th 17th, and 27th of the month.

For plans of the vessels, rates of passage-money, and to secure passages and ship cargo, apply at the company's offices, No. 122, Leadenhall-street, London; and 57, High-street, Southampton.

CWMBRAIN PATENT IRON REFINERY.—The PROPRIETORS of IRON FORGES and MILLS are respectfully INVITED to MAKE TRIAL of Mr. BLEWITT'S REFINED IRON, or METAL, PREPARED by a

NEW PATENT PROCESS,

whereby the IRON is completely FREED from the IMPURITIES CONTRACTED in the BLAST-FURNACE, and, by judicious mixtures, rendered applicable to every kind of manufacture. Heretofore, the metal usually sold in the market has been produced from he worst pigs, scraps, and refuse of some particular blast-furnace, or set of furnaces, without any mixture, or any regard to quality, or the purpose for which it might be required. The PATENT METAL is PREPARED ON SYSTEM, and TO ORDER, for any of the following purposes:—

1. For BOILER and TANK-PLATES. 39
2. For TIN-PLATES, commonly called COKE-PLATES.
3. For STRONG CABLE BOLTS, RIVET, and ANGLE IRON.
4. This COMPOUND PUDDLED, beat under the hammer into a bloom, reheated, and rolled into a 6 or 6½-inch bar, makes TOPS and BOTTOMS for FLANCH and OTHER RAILS, of very superior quality, and attended with less waste than any other kind of iron used for that purpose. It is also well adapted for nail-rods, horse-shoes, and for other ordinary uses of the blacksmith.

The PATENT METAL is marked with a squirrel, and the initials "R. J. B.," and is to be had only at the "Cwmbrain Iron-Works," near Newport, Monmouthshire

PATENT TOUGHENED CAST-IRON.—Messrs. GARDEN and MACANDREW beg to call the attention of Architects, Builders, Engineers, Ironfounders, &c., to the ABOVE DESCRIPTION OF IRON (Mr. Morries Stirling's Patent), which, after numerous trials, experimental and practical, is found greatly to exceed all other cast-iron in tensile and transverse strength, as well as in resistance to crushing forces. Several of the most extensive ironmasters have been licensed, and from them, or their brokers, the patent iron can be procured.

Messrs. GARDEN & MACANDREW have always a STOCK of this IRON in PIGS, and are ready to EXECUTE ORDERS to ANY EXTENT, on the shortest notice.

27, Queen-street, Cheapside, August 10, 1849. 40

TO ENGINEERS AND BOILER MAKERS.—The BIRMINGHAM PATENT IRON TUBE COMPANY MANUFACTURE PATENT LAP-WELDED IRON TUBES (under Mr. R. Prosser's Patent) for Marine, Locomotive, and all Tubular Boilers. Also, TUBES for Gas, Steam, and other purposes. All sorts of IRON GAS FITTINGS.

WORKS—Smethwick, near Birmingham. 41

LONDON WAREHOUSE—No. 6, Upper Thames-street.

WIRE ROPE.—The Undersigned beg to inform the public, that they have become SOLE LICENSEES of Mr. ANDREW SMITH, for the MANUFACTURE and SALE of his PATENT WIRE ROPE; and having fitted their premises with his very superior improved machinery, have only to assure those who may favour them with their orders, that the same care and attention shall always be bestowed which, they have reason to believe, has secured them such general support. 42

LIGHTNING CONDUCTORS, SIGNAL CORD, and SASH LINE, always in stock.

WILKINS & WEATHERLY.

Patent Wire Rope Works, No. 39, High-street, Wapping, London.

SMOKE NUISANCE.—TO ENGINEERS, MANUFACTURERS, MILLOWNERS, AND OTHERS USING STEAM BOILERS.

COLLINS' PATENT STEAM BOILER APPARATUS CONSUMES SMOKE.

SAVING OF FUEL GREAT (full 30 per cent.) 43

GENERATING STEAM UNEQUALLED.

NO ALTERATION in usual SETTING of BOILERS, and cost of apparatus and fixing trifling.—Also,

WATTEAU'S PATENT FOR PREVENTING INCRUSTATION IN BOILERS, now used extensively, and with the best results.

References given, and plans forwarded, on application to James Buckingham, Esq., C.E., No. 13, Judd-place, New-road, or J. W. Grazebrook, agent, Bull Wharf, Upper Thames-street, London.

BEST STAFFORDSHIRE and LONDON-MADE BOILERS, warranted, and supplied on the lowest terms; prices forwarded, by addressing J. W. Grazebrook.

Bull Wharf, Upper Thames-street, August 4, 1849.

EMERSON'S PATENT LIQUID CEMENT is ready for use, is simple in its application, and only ONE-EIGHTH the COST of OIL PAINT; for beauty it is pre-eminent over all other materials used on the fronts of houses—giving the exact appearance of FINE CUT STONE; can be used at once on fresh Roman cement or other plastering; is particularly calculated for country houses, villas, or gate entrances that have become soiled or dingy, which can be beautified in any weather, at a trifling cost. Sold in casks, of 1, 2, and 3 cwts., at 8s., 15s., and 21s. each.

PATENT MINERAL PAINT. 44

Invaluable as a COATING for SHIPS' SIDES and BOTTOMS, all kinds of WOOD or METAL WORK, roofing felts, leaky roofs, spouts and gutters, doors, sheds, railing, and all kinds of out-door work, and being perfectly waterproof, will preserve their surfaces from atmospheric influence and decay—requires no preparation, and will dry in a few hours.—Sold in casks, 2 to 50 gallons. Brilliant black, 2s.; rich brown, 2s. 9d. per gall.

BELL, LEAR, & CO., 16, Basing-lane, Cheapside.

NEUBER'S SCENTED LIQUID GLUE, being perfectly transparent, is admirably ADAPTED for LADIES' FANCY WORK, &c. In bottles, at 1s. each. 45

NEUBER'S IMPROVED LIQUID GLUE.

NEUBER'S WASHABLE WATER VARNISH, for PAPER HANGING, &c., is without smell, and requires no preparation of size.—Best full bodied, 12s. per gallon; flat, 8s.; and in bottles at 1s. and 1s. 6d.

NEUBER'S IMPROVED SUPERIOR WHITE PAPER VARNISH, for MAPS, PLANS, &c.—14s. per gallon, and in bottles 1s. each.

NEUBER'S TRANSPARENT FRENCH POLISH, 25s. p. gal., and in bottles 1s. each.

Naptha Polish, 14s. per gallon; Best Dark Oak Varnish, 10s.; Pale, 12s. per gallon.

Best French ditto, 21s. per ditto; Best Dark Carriage ditto, 13s.; Pale, 14s. per ditto.

Wholesale at the Patentee's, NEUBER,

Varnish and Japan Manufacturer, 549, New Oxford-street, London.

Samples forwarded on receipt of 18 postage stamps.

Wholesale Agents—Low and Son, perfumers, 330, Strand; Hopwood and Parke, Fish-street-hill, London; P. Walker and Co., Jamaica-street, Glasgow, and 1, Duke-street, Leith; Robinson, Palmer, and Palmer, operative chemists, Colmore-row, Birmingham; W. Sims, Bath; F. Myers, Preston.

N.B.—Respectable local agents are required for the provinces.

PORTABLE GAS LIGHT.—The HOLLIDAY LAMP generates its own gas cheap; will burn in the open air, without attention, for ten hours, a pure white light, equal to fourteen candles, without meter, wick, or glass; far superior to all other lights, and peculiarly adapted for all public and private purposes—railways, shops, booths, streets, factories, schools, docks, &c. May be seen (price 15s. each) at R. Holliday and Co.'s, the Patentees' Works, Turnbridge, Huddersfield; 29, Oak-street, Manchester; Sussex-street, Sheffield; and 128, Holborn-hill, London. 46

PATENT IMPROVEMENTS IN CHRONOMETERS, WATCHES AND CLOCKS.—E. J. DENT, 82, Strand, and 33, Cockspur-street, watch and clock maker, BY APPOINTMENT, to the Queen and his Royal Highness Prince Albert, begs to acquaint the public, that the manufacture of his chronometers, watches, and clocks, is secured by three separate patents, respectively granted in 1826 1840, 1842. Silver lever watches, jewelled in four holes, 6 gs. each; in gold cases, om £8 to £10 extra. Gold horizontal watches, with gold dials, from 8 gs. to 12 gs. each.

DENT'S PATENT DIPLIEDOSCOPE, 47

or Meridian Instrument, is now ready for delivery.—Pamphlets containing a description and directions for its use 1s. each, but to customers gratis.

NOTICE.—WENHAM LAKE ICE SUPERSEDED!

(*BY ROYAL LETTERS PATENT.*)

MASTERS AND CO.'S PATENT SHERRY COBBLER FREEZING AND COOLING JUG.

By this Patent Jug, spring water is congealed into the purest ice, on the table or sideboard, for Sherry Cobblers, &c., in FIVE MINUTES, at the cost of Twopence. The public is respectfully invited to see the process of this extraordinary and useful invention, as actually BOILING WATER CAN BE CONVERTED INTO ICE without the aid of ice!

Patentees of the Freezing Machines (by which 20 to 100 quarts of Desert Ice can be made in a few minutes, and Rock Ice at the same time, and Wine cooled), Cooling Decanters, Refrigerators, Butter Coolers, and Percolators. By this last-mentioned article a bottle of wine, &c., can be cooled in a minute without ice, for one halfpenny.

MASTERS & CO.'S IMPROVED APPARATUS FOR MAKING PURE SODA WATER, LEMONADE, NECTAR, and all ÆRATED WATERS.—This apparatus needs only to be seen to be appreciated. Price 30s.—MASTERS & CO., PATENTEES, 48

294, REGENT-STREET, AND 7, MANSION-HOUSE-STREET, CITY.—Also

BY ROYAL LETTERS PATENT,

MASTERS & CO.'S PATENT ROTARY BUFF KNIFE CLEANERS, which will clean and polish, equal to new, twelve knives in one minute, without noise or dust.

The various processes shown at Masters and Co.'s Show Rooms, 294, Regent-street, and 7, Mansion-house-street, City, and may also be seen at the Royal Botanic, Zoological, and Colosseum, Regent's-park, and the Polytechnic Institution, Regent-street.

294, REGENT-STREET, AND 7, MANSION-HOUSE-STREET, CITY.

THE PATENT OFFICE AND DESIGNS REGISTRY, *No. 210, STRAND, LONDON.*

INVENTORS will receive (gratis), on application, the OFFICIAL CIRCULAR OF INFORMATION, detailing the eligible course for PROTECTION of INVENTIONS and DESIGNS, with Reduced Scale of Fees. 49

Messrs. F. W. CAMPIN and CO. offer their services, and the benefit of many years' experience, in SECURING PATENTS and REGISTRATIONS OF DESIGNS, with due regard to VALIDITY, economy, and dispatch—assisted by scientific men of repute.

Also, in MECHANICAL and ENGINEERING DRAWINGS, whether connected with Patents, Railways, or otherwise, by a staff of first-rate draftsmen.

Application personally, or by letter, to F. W. Campin and Co., No. 210, Strand (corner of Essex-street).

SCHOOL OF MINERALOGY, CHEMISTRY, AND GENERAL SCIENCE.

MESSRS. NESBIT'S ACADEMY, 50

No. 33, KENNINGTON-LANE, LAMBETH, NEAR LONDON.

In this SCHOOL, in addition to all the branches of a good education, EVERY FACILITY is AFFORDED for obtaining a knowledge of ANALYTICAL CHEMISTRY and NATURAL SCIENCE, as applied to the Arts, Manufactures, and Agriculture.

The pupils are practically taught in the Laboratories, which are fitted up with every essential for the most extensive chemical investigations.

Mr. Nesbit's works on Land Surveying, Mensuration, Gauging, Arithmetic, English Parsing, &c., may be had of all booksellers.

References.—Dr. D. B. Reid, F.R.S.E., &c., House of Commons, Westminster; R. Prosser Esq., C.E., Birmingham; J. L. Bullock, Esq., Editor of *Fresenius's Chemical Analysis*, Conduit-street, Regent-street; J. Gardner, Esq., M.D., Editor of *Liebig's Letters*, &c., Mortimer-street, Portland-place; and W. Shaw, Esq., Strand, London.

LOANS ON DEBENTURES.—The CALEDONIAN RAILWAY COMPANY are prepared to RECEIVE TENDERS OF LOANS, in sums not less than £500.—Applications to be made or addressed to this office. 51

125, George-street, Edinburgh, May 30, 1849. D. RANKINE, Treasurer.

CALEDONIAN RAILWAY PREFERENCE SHARES.—THE HALF-YEARLY DIVIDEND on these shares, after the rate of SEVEN PER CENT. PER ANNUM, will be payable on the 21st September.—Intimation is hereby given to those parties who have not yet exchanged their Scrip, that the same must be presented for registration at this office at least fourteen days before the dividend becomes payable. 52

J. W. CODDINGTON, Secretary.

Caledonian Railway Office, 125, George-street, Edinburgh, August, 1849.

IMPORTANT TO RAILWAY TRAVELLERS.

RAILWAY PASSENGERS' ASSURANCE COMPANY. 53

Empowered by Special Act of Parliament.

Capital One Million.

OFFICES—3, OLD BROAD-STREET, LONDON.

The company's SINGLE JOURNEY TICKETS are now obtainable on the London and North-Western Railway, the Lancashire and Yorkshire Railway, and the Chester and Holyhead Railway; and arrangements for their ISSUE on other lines of railway will shortly be announced. The rates of premium are—

3d.—To insure £1000 to a first-class passenger.
2d. „ 500 to a second-class „
1d. „ 200 to a third-class „

Periodical tickets are likewise granted on the following terms:—

To insure £1000 for three months, at a premium of	.....	£0	10 0
„ 1000 for six months.	„	0	16 0
„ 1000 for twelve months,	„	1	0 0

These tickets allow the holder the option of travelling in any class carriage, and on any railway in the United Kingdom. The amount will be paid to the representatives of the assured in the event of a fatal accident; and in cases of personal injury, liberal compensation will be made.—The premium charged includes the stamp duty.

ALEXANDER BEATTIE, Secretary.

EMIGRATION.—VAN DIEMEN'S LAND AGRICULTURAL COMPANY.

(*Established by Act of Parliament and by Royal Charter.*)

OFFICE—No. 6, GREAT WINCHESTER-STREET, LONDON. 54

GOVERNOR—JOHN CATTLEY, Esq.

DEPUTY-GOVERNOR—EDWARD MARSHALL, Esq.

DIRECTORS.

Henry Alexander, Esq.	Charles Pearse, Esq.
Thomas Alexander, Esq.	Thomas Helme, Esq.
Capel Cure, Esq.	Robert Helme, Esq.
J. G. Cattley, Esq.	Valentine Knight, Esq.
Stephen W. Cattley, Esq.	Harry Mackenzie, Esq.
Brice Pearse, Esq.	John Pearse, Esq.

Francis Wilson, Esq.

The title deeds of the company having recently been confirmed by Act of Parliament, they are now enabled to OFFER FOR SALE the FEE SIMPLE of every portion of them, consisting of FOUR HUNDRED THOUSAND ACRES, in various parts of the colony; but more particularly invite the attention of emigrants to the eligible districts of Circular Head and Emu Bay.

The company's district at Circular Head contains 20,000 acres, of which 4000 acres lie in the Peninsula, and the residue on the adjoining main land. The climate much resembles that of Devonshire, being remarkably pleasant and salubrious, free from drought in summer, and frost in winter—thus enabling the farmer to carry on his operations throughout the year; and the soil on the main land, though for the most part heavily timbered, is some of the richest in the island, being of a deep black vegetable mould, very friable, easily worked, and producing luxuriant crops of potatoes, wheat, and every description of European grain, fruits, and vegetables, as shown by the result of a thriving agricultural population, who have already cleared and cultivated upwards of 2000 acres there. The company's township of Stanley now boast a stone-built church, holding 600 persons, schools for boys and girls, with residences for masters and mistresses, a medical practitioner, a stipendiary magistrate, police court, a mill, more than sufficient for all the inhabitants, with all the appliances of a highly civilised community, and the harbour will accommodate vessels of 300 tons burden. Those who are confined as to means can defer the clearing their lands until they have saved some money, which they can soon do, labour being in great demand and food cheap. Timber for sawing and splitting abounds—frost and snow are unknown, and the soil is a rich deep loam, peculiarly favourable for agricultural purposes. The population on the company's lands, according to the census of 1848, was 900, possessing 250 cattle, 700 swine, and 35 horses; they raised produce in 1847 to the amount of £15,000.

There are no convicts employed, nor any stationed within 150 miles of these settlements. The company possess all descriptions of live stock, such as sheep, cattle, horses, swine, and deer, of the purest breed, sent out from England at great expense, and large sums of money have been expended by the company upon their several locations on roads, bridges, farm-buildings, and granaries.

Possessing, as the company's lands do, the various advantages of fertile soil, and a fine climate, with frequent and ready access by water to the neighbouring markets, an abundance of live stock, seeds, farm implements, and stores for sale, and a large agricultural population already located, it must be evident that the newly-arrived and inexperienced emigrant can at once commence operations, without loss of time or unprofitable outlay of capital; they, therefore, offer for sale, 80 acre sections of freehold land on the following terms.—Price £2 per acre. Each purchaser at Emu Bay to have the privilege of purchasing a quarter of an acre allotment in the township of Burnie. A purchaser may have a free passage, or receive 20*l.* to provide himself with one, with further assistance to families. Half the purchase-money may remain on interest at 5 per cent. for 7 years.

The company reserves to itself the right to fords, ferries, and the formation of bridges, and dams across rivers and streams, as well as to the use of indigenous timber, and materials for works of general benefit. It retains also the right of laying out and constructing roads through all the alienated lands—ensuring, however, compensation for damage to parties by their formation, and of making the Colonial Fencing Act applicable to adjoining tenants.

By order, GEO. H. HOWELL, Secretary.

DAMP AND GASEOUS EXHALATIONS. SANATARY MEASURES.

All MEMBERS of BOARDS OF HEALTH are especially DIRECTED to the most EFFECTIVE MEANS which they can ADOPT to PREVENT the injurious and often FATAL EFFECTS upon the HEALTH of the COMMUNITY, arising from exhalations that are produced from moisture, decayed animal matter (as in grave-yards), stagnant water, and collections of fœtid refuse, tending to produce a miasmatic state of atmosphere. In situations so effected, the impervious quality of the ASPHALTE of SEYSSEL renders it the most perfect PAVEMENT or COVERING that can be relied upon for hermetically closing, and thereby preventing the rising of moisture and escape of noxious vapours. The present extensive application of this material for covering roofs, terraces, and arches, for preveating the percolation of wet, is strong evidence of its effectiveness for the above purposes, which is further confirmed by the following extract from the Report of the Commissioners on the Fine Arts:— 55

"In 1839, I superintended the construction of a house of three stories on the Lac d'Enghein. The foundation of the building is constantly in water, about 19½ inches below the level of the ground floor. The entire horizontal surface of the external and internal walls was covered at the level of the internal ground floor with a layer of SEYSSEL ASPHALTE,* less than half an inch thick, over which coarse sand was spread.

Since the above date, no trace of damp has shown itself round the walls of the lower story, which are for the most part painted in oil, of a grey stone colour. It is well known that the least moisture produces round spots, darker or lighter, on walls so painted. Yet the pavement of the floor, resting on the soil itself, is only about 2½ in. above the external surface of the soil, and only 19½ in., at the utmost, above that of the sheet of water.

The layer of Asphalte having been broken and removed, for the purpose of inserting the sills of two doors, spots indicating the presence of damp have been since remarked at the base of the door-posts."

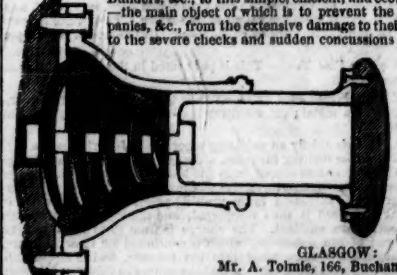
* This method has been adopted at the new Houses of Parliament.

Seyssel Asphalte Company, Stangate, London. I. FARRELL, Secretary.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

JOHN BROWN'S CONICAL BUFFER, BEARING, AND DRAW SPRINGS.

The Patentee invites the attention of Railway Authorities, Carriage Builders, &c., to this simple, efficient, and economical BUFFER SPRING—the main object of which is to prevent the great loss accruing to companies, &c., from the extensive damage to their waggons, vans, &c., owing to the severe checks and sudden concussions to which they are subject.



Specimens may be seen; and further information obtained of the PATENTEE, 56

ATLAS STEEL WORKS, *SHEFFIELD*, or of his AGENTS, as under:—

LONDON:
Mr. J. Freeman, 19, Artillery-place, Finsbury.

GLASGOW:
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